DOCUMENT RESUME

ED 360 997 IR 054 689

AUTHOR DeCandido, Robert
TITLE Collections Conservation.
INSTITUTION Association of Research Libraries, Washington, D.C.
SPONS AGENCY National Endowment for the Humanities (NFAH), Washington, D.C.
REPORT NO ISBN-0-918006-67-8
PUB DATE Mar 93
NOTE 142p.; "One of seven in a series of Preservation Planning Program (PPP) resource guides" (Jutta Reed-Scott, Series Editor), see IR 054 690-695.
AVAILABLE FROM Association of Research Libraries, 21 Dupont Circle, N.W., Suite 800, Washington, DC 20036.
PUB TYPE Collected Works - General (020) -- Guides - Non-Classroom Use (055) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Academic Libraries; Books; Check Lists; *Conservation (Concept); Decision Making; Evaluation Methods; Higher Education; Library Collection Development; *Library Collections; *Library Materials; *Preservation; Program Development; Program Implementation; *Records Management; Repair; Resource Materials
IDENTIFIERS Book Preservation; *Book Restoration; *Library Materials Conservation

ABSTRACT

Collections conservation is an approach to the preservation treatment of books and book-like materials that is conceptualized and organized in terms of large groups of materials. This guide is intended to enable a library to evaluate its current collections conservation activities. The introduction describes collections conservation and gives program development guidance. A selection of the following readings from the published literature provides an overview of programs and information on standardized repair procedures: (1) "A Manual of Step-by-Step Procedures for the Maintenance and Repair of Library Materials: Second Edition" (Carolyn C. Morrow and Carole Dyal); (2) "Tip-Ins and Pockets" (Jane Greenfield); (3) "A Simple Workstation for the Conservation of Library Materials" (Illinois Cooperative Conservation Program); (4) "Preservation Enclosures" (Hedi Kyle); (5) "Understanding Treatment Options," "Tightening the Hinges of a Case-Bound Book," "Double Tray Box" and "Appendix 1: Decision-Making Checklist for Book Repair" (Carolyn C. Morrow and Carole Dyal); (6) "Repairing Paper Artifacts" and "Surface Cleaning Paper" (Sherelyn Ogden); (7) "Polyester Encapsulation" (Mary L. Rizenthaler); (8) "Harvard University Widener Library Conservation Services: Institutional Profile" (Nancy Schrock and David Moore); and (9) "The Book Repair Program at Brigham Young University: An Institutional Profile" (Randy Silverman). An annotated bibliography of 14 selected readings is included. (SLD)

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Preservation Planning Program

Collections Conservation

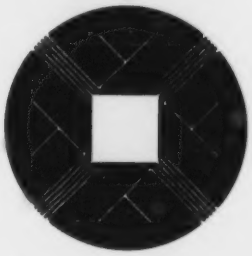
By
Robert DeCandido
Head, Shelf and Binding Preparation Office
New York Public Library

March 1993

Series Editor
Jutta Reed-Scott
Senior Program Officer for Preservation and
Collection Services

Managing Editor
C. Brigid Welch
Senior Program Officer for Information Services

Production Assistant
Annette C. Verna
Program Assistant for Publications



Association of Research Libraries

One of a series of resource guides funded by The National Endowment for the Humanities and administered by The Association of Research Libraries

Published by the
Association of Research Libraries
21 Dupont Circle, NW
Suite 800
Washington, DC 20036
(202)296-2296
Fax (202)872-0884

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ISBN 0-918006-67-8

The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences--Performance of Paper for Printed Library Materials, ANSI Z39.48-1984.

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Preface

This is one of seven in a series of Preservation Planning Program (PPP) resource guides. Support for their preparation was provided by a grant from the National Endowment for the Humanities. The resource guides offer libraries comprehensive, easy-to-use information relating to the major components of a preservation program. The goal in each case is to construct a conceptual framework to facilitate preservation decisionmaking as it relates to a specific program area. ARL was fortunate to be able to draw on the extensive experience of a diverse group of preservation administrators to prepare these resources. Guides cover the following topics:

- Options for Replacing and Reformatting Deteriorated Materials
- Collections Conservation
- Commercial Library Binding
- Collections Maintenance and Improvement Program
- Disaster Preparedness
- Staff Training and User Awareness in Preservation Management
- Organizing Preservation Activities

Taken together, the guides serve as points of departure for a library's assessment of current practices. From the rich and diverse preservation literature, materials have been selected that relate principles or standardized procedures and approaches. The intent is to provide normative information against which a library can measure its preservation efforts and enhance existing preservation activities or develop new ones. The resource guides build on the body of preservation literature that has been published over the last decade. Every effort has been made to reflect the state of knowledge as of mid-1992.

The resource guides were prepared primarily for use with the *Preservation Planning Program Manual* developed and tested by the Association of Research Libraries, with support from the National Endowment for the Humanities. However, they prove useful to all those involved in preservation work in academic and research libraries. The guides may be used individually or as a set.

Each resource guide is divided into four sections. The first presents an overview and defines the specific preservation program component. The second section guides the review of current practice, explores the developmental phases that can be expected as a preservation program component develops, and lists specific functions and activities. The third part brings together key articles, guidelines, standards, and excerpts from the published and unpublished sources. The last section contains a selected bibliography of additional readings and audiovisual materials that provide additional information on a specialized aspect of each topic.

As libraries continue efforts to plan and implement comprehensive preservation programs, it is hoped that the resource guides will help to identify means of development and change and contribute to institutional efforts to meet the preservation challenge.

Jutta Reed-Scott
Senior Program Officer for Preservation and Collection Services
Association of Research Libraries

INTRODUCTION AND PROGRAM DESCRIPTION

Scope

Collections conservation is an approach to the preservation treatment of books and book-like material that is conceptualized and organized in terms of large groups of materials. The hallmarks of such an approach are standardized treatments, simplified techniques, and an emphasis on efficiency and functionality over such considerations as esthetics or authenticity. Simply put, collections conservation attempts to treat a large number of damaged books so that they are usable and will remain so.

This guide is intended to enable a library to evaluate its current collections conservation activities in order to begin or augment its collections conservation program. This guide is divided into three sections. The introduction describes collections conservation and gives guidance in evaluating and developing a program. A selection of readings from the published literature provides an overview of collections conservation programs and information on standardized repair procedures. A brief bibliography points to additional resources available, particularly instructional audio-visual material.

Functions of Book Repair

Size, condition, and use of the collections as well as available financial resources are the determining factors of the library's repair operations. At the heart of any collections conservation effort is the simple repair work that has always been a part of libraries. A book repair program keeps the general collections in usable condition as far as the mechanical treatment of books and book structures will allow. There are two ways that this is accomplished: 1) corrective treatment of books damaged by use and 2) preventive treatment of books entering the collections.

The two methods of choosing books for corrective treatment are use-driven selection and systematic inspection. Use-driven systems cull their candidates for repair from volumes being reshelved after circulation or consultation. Systematic selection works by choosing a collection of books and systematically inspecting them for items to repair.

The advantages of a use-driven selection process are that it will identify and treat a high proportion of books deserving priority treatment (i.e., those that are being used) and it is simple and straightforward. The disadvantages of this system are that it is reactive and therefore treatment is scattered and uncoordinated as well as being very dependent on the diligence and perceptions of the circulation staff.

A systematic approach allows the library to balance its selection throughout its collections; permits treatment of material based on expectations of future use; and allows the collections conservation unit to use its expertise to help in selection. The disadvantages of systematic selection are that it will select items for treatment that ought not to have a high priority (books that may be damaged but will not be used often, if ever) and it takes careful planning and extensive coordination to properly implement.

A balanced collections conservation program uses both methods of selection, drawing much of its work from circulation as well as systematically inspecting and reviewing the books on the shelves to find problems before they become irremediable.

Preventive treatment requires that material entering the collections receive a preservation

review, preferably during shelf preparation after cataloging. Candidates for preventive treatment are:

- newly acquired old books with damage;
- books damaged in shipping or processing;
- volumes with loose plates or maps;
- books with supplements, errata slips or plates to be tipped-in.

Preventive treatment is arguably the most cost-efficient type of preservation and ought to be a major concern of a collections conservation program.

What is Book Repair?

"Book repair" is a limited treatment, implying that the original is not replaced. When the original item cannot be repaired, terms such as "rebinding" and "restoration" are used. Before the limit of "repairability" is reached, however, some general distinctions can be made. Repair generally includes:

- the processes that might be called mending, such as fixing tears or replacing loose parts, such as pages or covers;
- adding new parts such as pockets for maps, errata slips;
- replacing lost parts.

Book repair generally does not include:

- changing or completely redoing the leaf attachment (the sewing or adhesive that holds the pages together);
- removing and completely replacing the covers or case of a book;
- the chemical treatment of the paper of the book.

Making protective enclosures is an activity that, though not truly a repair, is universally considered a part of collections conservation. This is an important maintenance option for at least three types of material:

- deteriorated items for which treatment cannot be immediately provided. This is often called phased treatment, meaning that putting something in a protective enclosure is a first, minimal stage of treatment;
- material which, though in good condition, needs extra protection in a library environment but is not suitable for library binding (i.e., high-quality facsimiles bound in simulated period bindings or limited edition poetry bound in special papers).
- non-standard and composite objects treated as single bibliographic units (e.g., a book on the tarot published in a box with a pack of tarot cards and a cloth for laying them out or a volume on urban planning for Florence, Italy published with a set of eight views each approximately 12" by 36", rolled and issued in a can about the size used for tennis balls).

The same workspace, staff, and (possibly) some of the same equipment can be used for making protective enclosures (or "boxmaking") and for doing repairs. The same people who teach repair often teach boxmaking.

Objectives of Book Repair in Libraries

Book repair is the great common denominator of preservation activities. It ranges from a basic inventory of tools and materials to elaborate collections conservation units with several full-time employees and significant budgets. Despite their variety, all these efforts share the objective of achieving one or more of the following benefits:

- reducing costs;
- retaining most of the original aesthetic and physical features of the book;
- speeding treatment.

Cost reductions are achieved by:

- increasing the value of books by lengthening their useful life;
- reducing the amount of replacements needed;
- reducing the amount of rebinding needed;
- preventing larger problems from developing.

Several reasons libraries want to retain the original features of a book include the following:

- the original features have artifactual interest;
- the characteristics of the original may be of research value;
- Well-kept collections encourage users to treat books carefully.

Speeding treatment may be an important objective for heavily used collections or for certain classes of books (such as reference works). Libraries placing a high value on timely reader service might also consider speeding treatment.

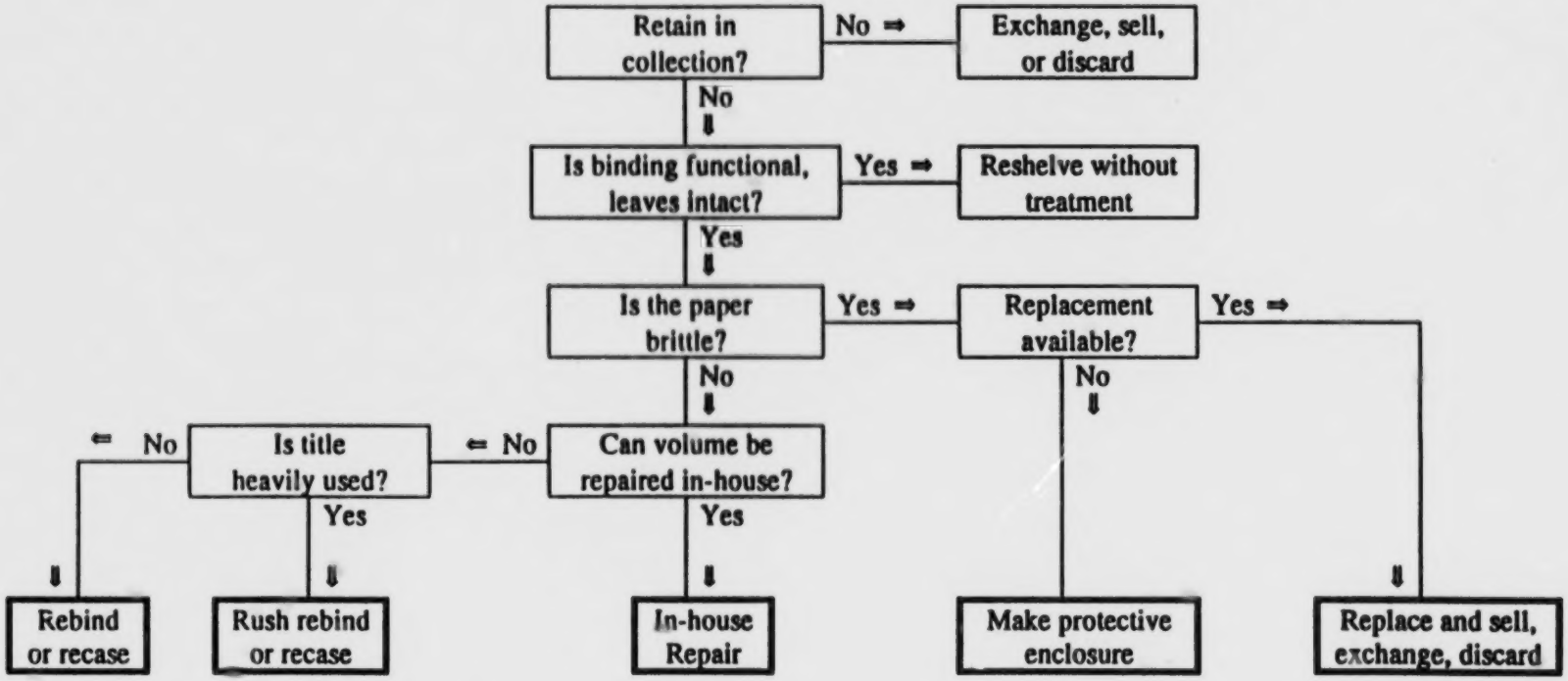
To achieve these objectives, a repair should have several characteristics. It should be functional. It should repair the problem it treats without creating others and leave the book as functional as it was when new. To do this, it must be compatible with the structure and mechanics of the book. The repair should be durable so that it will repay the investment of time spent to make the repair. It should be simple enough to do quickly and efficiently within a standard time period. It should be non-damaging nor should it deface the book it repairs.

Categories of Materials Treated and Treatment Selection Criteria

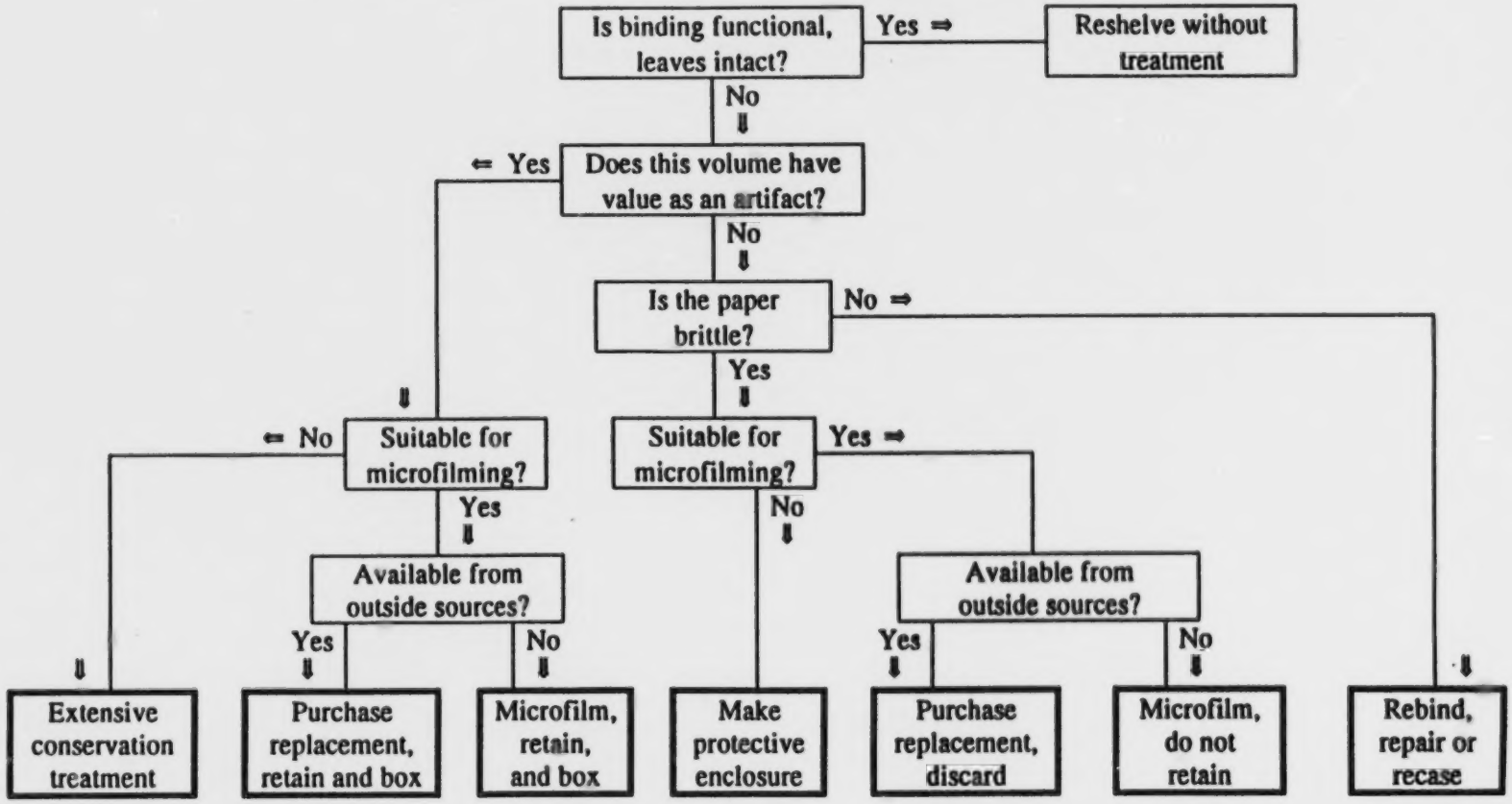
Collections conservation is only one method of preserving library materials. It must be integrated with the rest of the preservation effort if it is to be used to its best effect. Selection for repair or boxing cannot be discussed without attempting to see it in the context of all preservation selection. As discussed above, all preservation choices are compromises, and the reasons for selecting one over another are relative to the goals and purposes of the institution. For any given preservation problem the most appropriate choice of treatment will vary from library to library, from collection to collection, even from subject to subject.

The influences that effect the creation of selection criteria come from, first, the values and priorities derived from the goals of the institution and expressed in its collections and services and, second, the preservation options available to the institution. The first defines the objectives of a preservation program and the second defines its limits. Between the two a path for preservation choices can be developed. It is this path that forms the basis of systematic preservation selection. It is possible to describe this decision path in terms of a flowchart or decision tree (see below). Such devices may tend to oversimplify choices, but they also clarify the

Sample No. 1 Decision Tree for Determining Appropriate Preservation Treatment



Sample No. 2 Decision Tree for Determining Appropriate Preservation Treatment



way in which decisions are made. Limited though they are, systematic analyses such as these make possible the preservation of collections, not just individual items. All preservation decisions should be made within the context of the collections. In that sense, collections maintenance is no more comprehensive than any other type of preservation.

Treatment Specifications and Techniques

Though there is no fixed set of treatments that all collections conservation programs must provide, there are a number that experience has shown to be almost universally needed. Treatments include:

- cloth rebacking--replacing the cloth spine and hinges of a books cover;
- new endpapers--replacing a books endpapers and the lining that attaches them and the boards to the spine of the textblock;
- corner repair--recovering and strengthening the corners of a book cover;
- page repair--mending torn pages;
- hinge tightening--regluing the endpapers to the inside of the cover hinge;
- phase boxes--protective enclosures designed by the Library of Congress using heavy boards with string and button closures;
- tipping-in and/or hinging-in pages, leaves, plates, etc.

Other common treatments include:

- spine repair--mending without replacing the spine of a book cover;
- recovering--replacing the cover of a book;
- rebinding--replacing the leaf attachment;
- making pockets attached to front or rear cover for loose material;
- double tray boxes--a better and more time-consuming protective enclosure;
- other custom enclosures--wrappers, portfolios, etc.;
- pamphlet binder--special covers for very thin monographs.

There are any number of other treatments that can be learned or developed. It is important that all treatments improve at least one of three things:

- function--it should make it work properly;
- prevention--it should reduce the chance of future damage;
- protection--it should leave it better able to withstand future handling.

Choosing which treatments to do on any particular book would seem to be simple. In fact there are always a number of options. What and how much is done in any instance is a matter of judgement. That judgement is based on the three principles outlined below.

Minimal Treatment. The whole premise of collections conservation is to treat as many items as possible with the given resources. This is a very good example of less being more. Do only what needs to be done to make the book functional.

Standard Treatment. Standardize treatment techniques, procedures and materials for all common problems. Use standard treatments whenever possible. Resist the urge develop new and cunning solutions for every object that is selected for repair. Collections conservation needs to limit the treatments it offers to those which can be accomplished within a certain time period, typically one or, at the most, two hours. Effective scheduling of work (discussed more fully below) requires knowing how long repair will take.

Appropriate Treatment. Be sensitive to the way and extent which books will be used and choose the minimal standard treatment that is appropriate. An almanac that will be superseded in a year may not need to be treated the same way as a volume of an encyclopedia that may receive constant use for a decade or more.

Implementing a Collections Conservation Program

Though repair programs are a common component of library preservation programs, their inclusion is by no means universal. Whether they are appropriate for any particular library will depend on the needs and nature of that institution. The way of assessing the appropriateness of including a book repair program is straightforward and no different from that of assessing any other preservation treatment program component, usually by answerung the following questions. Are the benefits commensurate to the costs? Are they affordable?

The Benefits. The purposes and benefits of repair treatment are:

- reducing costs;
- retaining most of the original aesthetic and physical features of the book;
- speeding treatment.

Whether those benefits justify the costs will depend largely on the value a library places on retaining the physical and aesthetic qualities of the original, to what degree cost savings may be realized, and the importance to the library of quick and continuous access to material.

There are several alternatives to repair which retain original features:

- doing nothing and reshelving the material as is may be an acceptable choice if use of the item is restricted or very infrequent;
- making a custom protective enclosure to improve storage conditions. This may be the first step in orderly program of treatment, usually known as phased treatment;
- commercial rebinding and recasing does not keep the covers or the endpapers which are glued to them and it may change the method of leaf attachment.

None of these alternatives completely replaces the benefits to be gained by doing repairs but they may, for some libraries, be adequate. As for reducing costs, properly executed repairs virtually always result in increased value and reduced costs. The cost is mostly in terms of labor and space, resources that some libraries may have in greater supply than the cash that would be needed to rebind books.

The final benefit of repairs, that of speeding treatment, is one that each library must evaluate for itself. A repair unit can provide speedier service than a contracted service such as commercial rebinding because the actual treatments are simple and can be done quickly or they are done at the library so that materials can be off the shelves for the minimum amount of time.

How important is such speed of treatment for your collection? Is it worth the expense and effort of creating a repair unit? Are there enough volumes in your collection that are not only heavily used but are urgently needed by readers to justify the cost of a repair facility? What, indeed, are the costs against which these benefits must be judged?

The Costs. The costs for developing and operating a repair unit break down into three groups: space, material (equipment and supplies), and labor. In terms of space, the Illinois Cooperative

Conservation Program's plans and recommendations for a simple workstation for the conservation of library materials address the question of space as do several other of the works included in this resource guide. The value of space in an institution (and its cost) will depend very heavily on how much there is and how many competing needs there are for it. Nowhere is the classic relationship between supply and demand more clearly expressed than in the value of space in a library. For most institutions the value of space is extremely high. Obtaining an adequate and appropriate area to work in is usually the first and most difficult step in creating a repair facility.

The cost for equipment and supplies is an elastic quantity that can be scaled up or down depending on the size of the effort, or which can be gradually expanded as a program develops. Wedging such expenses into budgets is a exercise many library managers have learned to practice.

Labor may be the simplest or the thorniest of issues. Where there is a pool of free or inexpensive labor (volunteers and students for example), assignment of some of the work force to repair may be quite simple. Staff positions, on the other hand, represent an open-ended commitment of resources. These must be argued for, explained, and justified in the same way that space and money for material must be. An important labor cost which must be taken into account is that of training. Proper repair techniques are not intuitive. Readings, such as those which appear here, and the works from which they are taken and the audio-visual material listed in "Other Resources" below are only a part of the training which workers will need before they can begin making repairs. Personal instruction and closely supervised practice is essential for adequate training. The amount of training will vary slightly depending on the complexity and variety of tasks that a worker is being trained to do but there is a significant minimum of education and practice that is needed for any work at all.

Though the costs for creating and maintaining a repair unit can be analyzed in terms of financial resources, they involve far more. As with all new initiatives, creating a repair unit requires institutional flexibility, commitment, and support. On a personal level it requires those same qualities and, additionally, time, energy, intelligence, and knowledge. All these resources are in limited supply. Devoting them to this purpose requires a significant commitment.

Organization and Staffing

A collections conservation unit should have at least one person with training and experience in bookbinding and repair. In many cases it may be necessary for that person to get their training and experience on the job. The job title for the head of a collections conservation unit will vary from one institution to another but generally this person will be a high-level technician or non-professional. A very large library system may need to have a professional at the unit head level. The balance of the staff will consist of clerical, low-level technical or student workers. Because turnover in this level position (particularly students) is very high, training will be an ongoing duty of the unit head. The size of the staff will, of course, vary depending on the library's needs, available space, and funding. Even a very small staff of two or three full-time equivalents can have a significant impact on the usability and appearance of a medium-size library. The relationship between staffing and workflow is discussed in the next section.

Evaluating a Collections Conservation Program

The primary criterion in assessing the library's existing repair capabilities is the needs of

the library's general collections. Since appropriate treatment depends on the nature and mission of a given library there are no absolute benchmarks in terms of quantities or percentages for a successful collections maintenance program. There are, however, a number of common sense evaluations that can be made. They break down into three considerations:

Do the services offered correspond to the needs of the collections? Knowing whether services correspond to needs will depend on the accuracy and depth of knowledge of the condition of the collections that can be brought to bear on the question. This knowledge is not easily achieved. A well-conducted random sample condition survey would provide this information but intelligent and informed observation can achieve as much. The opinions and comments of experienced staff are also a valuable resource and not to be scorned. Anecdotal experience can be valuable when it is qualified and tested by disinterested and conscientious evaluation.

After a program has been functioning for a while it should be possible to find out if there is a group of material which is not receiving treatment. Adjustments can then be made in training and procedures to accommodate the untreated material.

Is the workflow balanced with the productivity of the unit? Balancing the workflow in a difficult and important responsibility. The percentage of books in a collection needing repair is typically below 10%. If there is an active commercial rebinding and recasing program it can be less than 4%. Arithmetically this means that in order to find one book for repair someone has to inspect 25. In real life the case is not so bad and a number of books can be eliminated from the search out of hand. It is still true that selecting books for treatment is time consuming and the ability of the library to select books for treatment will be a limiting factor on the workflow. Another problem is keeping the flow of incoming work consistent. As discussed above, there are two methods of selection for repair. The most common is to cull books for repair from the items being reshelved after use or circulation. This can create a very uneven workflow. The usual way around this problem is to establish quotas.

Quotas limit the amount of work that can be sent in a given period. They can be developed in an orderly manner.

1. determine the number of work hours available for doing repairs per week (or month), subtract a percentage for training, staff development and special projects
2. estimate the average number of repairs per hour (typically between 1 and 2 per hour but this will vary depending on the which treatments are most common in a particular library)
3. multiply the two above values to get the number the number of repairs that can be done per week (or per month)
4. divide up this quantity among the collections so that there will be an equitable distribution of services
5. schedule the delivery of quota material so that there is an even flow of work being sent to the unit.

Quotas accomplish several things. They control and organize the flow of work. They give a production target for the unit. Quotas form a link between the collections conservation unit and the public service unit as well as creating an equitable distribution of work. They give the public service units a production target, and they may be adjusted to meet special needs or situations.

Another aspect of the workflow that must be evaluated is the turnaround time. One of the major objectives of collections conservation is timely treatment. Books need to be returned to the shelf as soon as possible. Quotas can also help with this. They give staff a clear goal of processing one group of material before the next set arrives.

It is important not to overstaff a unit. It causes two problems--not enough work and not enough space. The first can be solved by using the second method of selection, a systematic inspection of the collections, to supplement the material sent from circulation. The second problem can only be fixed by getting more space. Starting off small and building up to an adequate level is probably the best way to avoid this.

How well have established priorities been addressed by the program? Setting priorities is always a difficult task. Collections conservation interacts with a broad range of collections and materials. Choosing which collections and/or treatments should be considered highest priority needs should involve a broad range of library personnel. By participating in the establishment of priorities they are made into supporters of the program and its goals. It also creates a group of people who can help judge whether those priorities are being addressed adequately.

Over and above the procedural evaluations there is also the need to constantly evaluate and monitor technical procedures and materials. There is a tendency over time for operations to drift away from there original form. This is particularly true when instructions are handed down through generations of staff members. Reexamination and evaluation of work procedures are periodically necessary. Suppliers are constantly coming up with new products so it takes constant vigilance to ensure that all materials used in repair are archival quality.

Conclusion

There are eight basic steps in creating a collections conservation unit and program.

- determine the needs of the collections;
- determine the need for collections conservation repair unit;
- develop priorities;
- develop procedures for selecting books for repair;
- get space;
- get equipment and supplies;
- get staff;
- train staff.

New enterprises need time to break-in. In the initial phase, training takes up a large portion of the staff time, procedures are developed, and lines of communication to the staff are opened. After this is accomplished, it is time to formalize the relationship with the public service staff and to establish quotas or other procedures that will ensure the flow of work to the unit. Once the regular flow of material begins, there will be a short period of shakedown. After that it is important to build a reputation for dependability and helpfulness. Once the collections conservation services become an accepted and valued part of library operations it is much easier to argue for expansion. It is also time to consider expanding the unit's responsibilities by increasing the number and complexity of treatments offered or by becoming more active in the inspection and selection books for repair.

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CONSERVATION TREATMENT PROCEDURES

A Manual of Step-by-Step Procedures for the Maintenance and Repair of Library Materials

SECOND EDITION

Carolyn Clark Morrow and Carole Dyal

Photographs by Todd C. Matus

1986

Libraries Unlimited, Inc. **Littleton, Colorado**

UNDERSTANDING TREATMENT OPTIONS

Book Repair

The seven **book**[1] repair procedures described in this manual address the major repair problems of modern **hardbound publisher's bindings**. The book repair procedures are *not* intended for the treatment of rare or unique materials. The **conservation** of rare materials requires a different approach than the **repair** of circulating books, serials, and reference works. Because rare books are usually segregated and their use restricted and supervised, their protection and long-term **preservation** is of more concern than their repair or **rebinding**. In fact, the physical condition of a rare book is part of its story, and any tampering that disrupts its bibliographic or historic evidence is not only strongly discouraged by scholars, but will lessen the value of an item.[2]

Case-bound publisher's bindings constitute the largest portion of library collections. Their disrepair is the most common conservation problem facing libraries. Despite the common nature of the problem, many libraries have not developed routine procedures for book repair and **preventative maintenance**. This failing may be a librarian's simple aversion to the "housekeeper" image. Also, *building* a collection interests most librarians more than maintaining it.

Wear and tear on library books is not only inevitable, it is philosophically desirable since it is a definite indication that books are being *used*. Unfortunately, disrepair is not exclusively caused by ordinary use; it also results from inadequate or poorly executed publisher's bindings, improper shelving and book return practices, or damaging storage environments. Regardless of the source of disrepair, a simple repair executed in time may eliminate the need later for expensive, time-consuming repair or rebinding.

At a commercial edition bindery, the **case (cover)** and the **text block** of a case bound book are made in separate production lines and glued together in a final step termed **"casing-in."** The **attachment** of the case to the text block is critical to its purpose of protecting the contents. This attachment can break down for a number of reasons. For example, the casing-in step may not have been done correctly by the binder. The chemistry of adhesives and the complexity of production machinery add up to a myriad of potential problems. It is not uncommon for a new book either to arrive loose in its case or to loosen almost immediately.

Case-bound books are meant to stand upright on their tails. A book that is placed on its **fore-edges** (either while awaiting reshelving or for lack of space) will eventually pull out of its cover. The **hinges** cannot support the full weight of the book when it is on its fore-edges and the shape of the **spine** will soon become concave instead of convex.

Book returns that allow books to drop *any* distance or to jostle roughly against each other are extremely destructive; the book's physical structure is simply *not* designed to withstand the shock. In addition to broken corners and torn pages, dropping a book causes the heavier contents to yank away from the cover. This is sometimes so dramatic that a book literally tears out of its cover.

A book that is loose in its case is the most common library **maintenance** problem. Every circulating collection would benefit from a regular program of stack inspection to locate books that are loose in their cases—especially in heavily used portions of the collection. Staff members and part-time assistants can be easily trained to recognize

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[1]Each term defined in the glossary of this book is printed in boldface the first time it appears in the text.

[2]For additional readings concerning this issue, see items 5, 18, 31, and 42 of the Selected Bibliography.

this problem. If books are caught at the point where they are merely loose, the repair is *inexpensive because the hinges can be tightened by the simple application of glue.*[3]

Once a text block has become loose in its case the vulnerable **hinge area** is stressed and the result is often a torn **endsheet**. This problem can be easily repaired by replacing the damaged endsheet after tightening the hinges. If the text block is allowed to remain loose, it will eventually tear away from the cover, and the book will require **recasing** or rebinding.

Even when a book is cased-in and shelved properly, its spine and hinge areas inevitably wear out first. The hinge is flexed during opening. Both the **head** of the book and its spine are yanked when it is taken off the shelf and jammed when it is returned to the shelf. Ultraviolet rays in sunlight or fluorescent light weaken and degrade the exposed spine of a shelved book. Therefore, the phenomenon of the "backs coming off" is common to all library collections.

If the spine lettering is still legible, a simple repair can replace the **deteriorated** spine with a new **bookcloth** spine. The original spine, with its frayed edges neatly trimmed, is **mounted** onto a new spine. This repair is cheaper than having the book recased at a **library bindery** and does not disrupt the sewing. Since the original **cover boards** are retained and the original spine mounted, the book has much the same appearance and **retitling** and remarking are unnecessary. Finally, a repair executed **in-house** reduces the length of time the book is unavailable for use. However, this repair is not sufficient when the case is excessively worn or the item is expected to receive continued heavy use.

Very few publisher's bindings are designed to withstand the rigors of library use. Additionally, as production costs rise, the first cutbacks are usually made in the quality of the bookwork: **"perfect" bindings** replace sewn **sections**; the cloth **super** is eliminated from the casing-in process; spines are **flat back** instead of **rounded and backed**; and **paperbacks** are issued instead of hardbound **editions**. Since newer books circulate more frequently than older books, it is unfortunate that libraries often receive new books in progressively weaker bindings. Even ordinary use will hasten the deterioration of already inadequate bindings. Thick, heavy, and oversize books are especially subject to damage because frequently their bindings are not correspondingly stronger.

Libraries cannot afford to have every book they acquire with an inadequate publisher's binding rebound by a commercial library bindery. The result, in any event, would be very boring. Although a **library binding** for a book in disrepair would probably outlast the book itself and thus solve the problem once and for all, it would be an unnecessary expense for many items. Based on projected future use, a simple repair may be all the maintenance needed, particularly as the date of publication becomes less current and the book circulates less frequently.

A case-bound book is typically held into its cover by super (cloth) and endsheets (sheets of heavy paper folded in half). The super is glued to the spine of the text block and extends as a hinge onto the cover boards. The folded edge of the endsheets is **tipped onto** the front and back of the text block, and half the sheet is glued to the inside of the cover boards during casing-in. If done correctly, this method of attachment, although not as secure as attachment by **cords** or **tapes**[4], suffices for most books. Unfortunately, the super used in most publisher's bindings resembles weak cheesecloth. Even worse for libraries (since super is unseen by the buyer), more and more hardbound publisher's bindings do not include super at all! Obviously, endsheets tipped 3 mm onto a text block will not support its attachment to a cover for long.

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[3]This technique was first published by conservator Carolyn Horton. See item 16 of the Selected Bibliography.

[4]Traditional hand bookbinding involved sewing each section in turn around cords or tapes and locking the sewing at the head and tail. The cords or tapes were then laced into the cover boards or glued to them. In 1882, the **Smyth sewing** machine was invented, enabling sections to be sewn together on a continuous thread and through-the-fold **sewing over tapes** or cords was gradually dropped altogether.

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The characteristic curved shape of a book's spine is formed during a step called "rounding and backing." Besides contributing to **openability**, the convex shape helps keep a book from sagging forward away from its cover. Unfortunately, many modern books are not rounded at all (flat back), or they are improperly rounded, or their shape is inadequately supported by glue and spine **linings**.

The critical attachment between the text block and cover of a modern binding often breaks down long before the cover is worn out and sometimes before the book is even used.[5] If the cover is in good condition, weak original components can be replaced with sound materials, and the book can be recased. This solution is desirable in terms of time and money when both the cover and the text block are intact, although detached from each other.

Recasing also can be a solution for books detached and deteriorated because of normal wear and tear. Torn endsheets and super are often accompanied by a cover that is torn or deteriorated in the hinge area. If appropriate to the title and its projected use, the spine area can be reinforced with new bookcloth and the book recased.

Because the hinge area of a book is the most vulnerable area, it is not uncommon for the first or last sections of a sewn text block to have loosened or detached. Loose sections must be reattached before further repairs can be performed.

Informed use of library bindery services is essential to the maintenance of circulating collections. Having an original cover replaced by a library binder is recommended when an item needs a new cover because it has received heavy use (such as a reference work) or is circulated frequently (such as a textbook or novel). However, in addition to full rebinding, most library binders provide "new case" (recasing) services for customers. Recasing, as opposed to rebinding, replaces only the cover, endsheets, and spine linings. Sections and original sewing are retained, and the book is not trimmed. The method of endsheet attachment, however, is an important consideration; when possible, new endsheets should be sewn on through-the-fold.

For the older, retrospective work whose binding has deteriorated with age or from abuse prior to its being added to the library, or for materials that have very weak paper, it may be advisable to recase the item in-house—provided the original binding has no **historic value**. Constructing a new cover in-house is not as hard on the item physically. Also, there may be more choices available in terms of binding style, **structure**, and the materials used than the library's contract binder can provide. Many items needing a new cover are simply too fragile to withstand the rigors of the bindery production line.

Maintenance

In addition to routine book repair activities, libraries have other conservation challenges. The five maintenance procedures included in this manual suggest solutions to some common problems.

Items such as unbound paperbacks and **pamphlets** must be bound or protected prior to being made available for use. The majority of these items can be bound by a library bindery. However, in some instances, in-house treatment is preferable. For example, many items received as paperbacks in a library are **single-section** pamphlets. Their pages are folded in the center and stapled, usually to a heavier-weight paper cover. Because of the ephemeral nature of most of this material and its brevity, pamphlets are particularly suitable for simple in-house binding. Music scores issued in a

[5]Returning an unused, damaged volume to the publisher for replacement will not solve the problem since inadequate binding will be uniform for the edition.

single-section **format** with accompanying parts are also suitable for in-house pamphlet binding.

While an in-house binding is inexpensive in time and materials, a library binding for a pamphlet costs as much, or more, than a binding for an ordinary book. The commercial binding will be constructed of **bookboard** covered with a **synthetic** bookcloth, and although **durable**, it is perhaps more binding than needed and often no more desirable from a conservation standpoint than an in-house product. In addition, not all paperbacks acquired by a library are suitable for mass-production paperback binding by a library bindery. An item may be unacceptable in the paperback production line if it is less than 1.5 cm thick, if its **inner margins** are too narrow for even the slightest trimming, or if it contains folded pages. Likewise, the paper in older paperbacks may be too fragile to be bound by machine.[6] Paperbacks with text blocks composed of folded sections sewn through-the-fold should be given a case binding at the library bindery so that the sewn format can be retained. These items must be examined carefully because at first glance, **burst bindings**, a form of **adhesive binding**, resemble sewn sections.

The most common problem paperback is one with **coated paper**. Paper that is coated, especially thick paper, is unsuitable for adhesive binding because the slick paper never adheres properly to glue, and the pages inevitably fall out. This process is greatly accelerated if the **grain direction** of the paper runs crosswise to the spine (the book is printed cross grain) because the stress on the adhesive binding is greatly increased. Many exhibition catalogs and photography and art books are issued on coated stock and given a paper cover. Frequently these items have **machine-sewn sections**. If the sections are trimmed and the items adhesive bound at a library bindery, they become a permanent problem on the shelves. Library binders are experimenting with new adhesive binding methods that promise a more durable product. Some can combine **notching** of pages with adhesive binding and produce excellent results. Adhesive binding services should be discussed with the library's contract binder and examples examined and tested.

Many items acquired by libraries are used infrequently or superseded. In addition to materials that may be unsuitable for commercial library binding because of coated paper, narrow inner margins, or an unusual format, these items may also be candidates for a simple in-house binding.

The simplest in-house maintenance procedure for paperbacks attaches **cambric** hinges to the inside **joints** and **reinforcing** boards of **bristol** to the inside covers. This binding does not improve the strength of the original page attachment method, but is suitable for infrequently used items, items that will be superseded, or items that are needed immediately. For more heavily used items, a library may choose to reinforce the covers by attaching protective cover boards and a **buckram** spine piece to the paperback. Again, the original page attachment method is not affected.

Staff who are sorting paperbacks for binding must have a clear understanding of *all* the available binding options, or their library will accrue future conservation and maintenance problems.

In the past, **mending** tears and voids in paper documents (such as book pages, maps, prints, or manuscripts) has been the only in-house "conservation" activity assiduously practiced by libraries. Unfortunately, due to lack of information, libraries have almost universally mended tears with some type of **pressure-sensitive tape**. In addition, book bindings have not escaped the horrors of the tape dispenser. Most collections contain examples of the liberal application of everything from "book tape"

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[6]Some binders use **cleat sewing** for paperbacks. Since cleat sewing intrudes on the inner margin and produces a rigid, flat spine, it is an unacceptable method of binding for paperbacks, or for that matter, anything but the most ephemeral materials.

to cellophane, surgical, or electrician's tape. Tape is convenient to use, but cannot be recommended except for the most ephemeral materials.[7] Within a short time, the adhesive on the tape deteriorates, leaving a sticky residue, and staining and embrittling the paper. Tape removal from rare materials is a time consuming process that must be performed by a professional conservator. Frequently the stains and damage remain even after the tape and adhesive have been removed with solvents.

Conservators use many different techniques for mending tears and voids, including applying **paper pulp** with a **leaf-casing** machine and an elaborate method that uses matching paper beveled and joined to the original. However, for overall ease of application and proven safeness, a technique using a **water-torn** strip of **Japanese paper** applied to the tear with **starch paste** is highly recommended. When applied carefully, the mend is unobtrusive, **reversible**, and permanent. Application under the direction of a conservator or informed curator is even suitable for rare/unique materials.

Coated paper, however, should not be mended using starch paste because of the effect of water on the coating. Instead, tears on coated paper should be mended using heat-set tissue made to the specifications of the Library of Congress Preservation Office or another well-known conservation laboratory. This tissue is available commercially.

Most library collections contain large numbers of **leather-bound** books that present a discouraging maintenance problem. *Simple* book repair techniques are not possible for leather bindings, and the typical commercial library binding is not suitable for most 18th and 19th century items. Yet leather books of this period were not bound as sturdily as previous centuries and are frequently in a state of serious disrepair. As bookbinding became a lay trade and the demand for books increased, shortcuts in craftsmanship appeared. In most cases, changes made for the sake of economy and speed sacrificed the functional qualities of the binding.

Although leather is an extremely durable **covering material** for books, dirt, overly dry and hot storage conditions, or humid conditions that promote fungal growth can seriously reduce its flexibility and strength. Additionally, vegetable-tanned leather manufactured since the eighteenth century is subject to **acid deterioration**, either from acid left from the tanning process, or from the absorption of sulfur dioxide (which changes to sulfuric acid) in polluted urban and industrial environments. Protective buffering salts present in earlier leather bindings are missing from most leather produced after 1700. Without a buffer against acid attack, leather suffers from chemical deterioration, which in its extreme is a weak, powdery condition termed "red rot."[8]

Traditionally, the treatment of leather bindings has been largely a matter of established practice and personal preference based on experience. Unfortunately, there is no conclusive evidence that any one treatment process under a given circumstance is best for the treatment of leather. In fact, research to date indicates that little benefit accrues from *any* of the treatments currently practiced! The best protection for a leather binding seems to be proper environmental conditions and custom-made **protective enclosures**. Because not enough is known about the long-term effects of leather treatment, most conservators advise against treating leather bindings beyond removing surface dirt with a dust cloth such as One Wipe®; placing interleaving sheets between the cover boards and the text block to prevent **acid migration** from the leather **turn-ins**; and providing a protective enclosure.

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[7]Only one tape—Archival Aids®—has been recommended by some conservators as safe to use for materials that will not be kept in the permanent collections of libraries.

[8]For further information see item 13 of the Selected Bibliography.

Protective Enclosure

Protective enclosure is chosen as a conservation option when actual physical treatment is inadvisable or not possible for the moment. Treatment may be inadvisable in view of an item's condition or expected use, or because treatment would adversely affect the **bibliographic integrity** or monetary value of an item. Enclosures may also be provided simply as physical protection for valuable, damaged, or vulnerable materials; as a first step or **phased conservation** for an item or group of items that will eventually receive full conservation treatment; or as a supplement to **full conservation treatment**.

The purpose of any type of protective enclosure[9] is to protect an item from **mechanical damage** and, in varying degrees, to mitigate the effects of environmental agents of deterioration such as dirt, air pollution, and light. This protection can range from an elaborate airtight temperature and humidity-controlled exhibit case to a simple wrapper made from **alkaline** materials. The five protective enclosure procedures included in this manual illustrate a range of enclosures that meet most conservation needs.

Encapsulation, the technique of enclosing fragile, **brittle**, vulnerable, or damaged flat paper documents in a polyester film envelope, was developed as an alternative to cellulose acetate lamination, which was devised by William J. Barrow in 1935. As practiced today, lamination involves sealing a **deacidified** document between sheets of tissue and film. By the application of intense heat (340-360 degrees Farenheit) and pressure, the laminates impregnate the fibers of the paper and therefore reinforce a weak document.

Both lamination and encapsulation provide physical support or strength to an item, but encapsulation has a number of advantages over lamination. First, encapsulation is instantly and completely reversible, unlike lamination. Secondly, the technique of encapsulation is easily learned and requires only inexpensive equipment, whereas the cost of a laminating machine may be prohibitively high except for large conservation facilities. Thirdly, the intense heat and pressure exerted on a document during lamination, and the difficulty of obtaining a reliable cellulose acetate film, make lamination a risky business for archival documents (items that will be kept in a collection indefinitely).[10]

The polyester film used in encapsulation is a stable, inert substance that is very strong, dimensionally stable, and widely available in a range of thicknesses and sizes. The Preservation Research and Testing Office at the Library of Congress has tested polyester film and found it appropriate for conservation purposes. The technique of encapsulation involves sandwiching a document between two sheets of polyester film. The sandwich is either held together with double-sided tape, ultrasonics, or heat sealed at the edges. Because of the static charge created by the film, encapsulation cannot be used for items with images made in pencil or charcoal (pastels).

It should be kept in mind that a *chemically unstable* document deteriorating as a result of high acid content receives no benefits from encapsulation other than the considerable benefit of *physical protection*. It is preferable if items needing **neutralization and alkaline buffering** are treated prior to encapsulation. Deacidification can only be performed safely, however, with adequate facilities and under the supervision of a conservator. If a chemically unstable document is also fragile or damaged, it is perfectly acceptable to encapsulate it, providing it is understood that the item should be deacidified when feasible. When possible, a sheet of alkaline paper should be encapsulated with an acidic item; this technique will alleviate

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[9] I.e., portfolio, box, folder, wrapper, microenvironment, etc.

[10] See item 24 of the Selected Bibliography.

the increased rate of deterioration caused by trapping an acidic item in a relatively airtight envelope.[11]

Polyester film encapsulation is also a suitable technique for protecting items from physical wear and tear caused by frequent use. A folder made of polyester film sealed on two edges can temporarily be used to protect fragile items that are being examined by a patron. Likewise, a sheet of film can be laid over a large document or map to protect it during use.

A **portfolio** or box protects a book by providing a **microenvironment**—a buffer against rapid fluctuations in temperature and humidity, and protection from dust, light, atmospheric pollutants, and mechanical damage. To be effective, the enclosure must be custom-made from permanent and durable materials to fit the item *exactly* and allow for easy removal and replacement of the book by users. The typical "slip case" may serve as a decorative accompaniment to a rare book or limited edition, but does not provide proper protection from a conservation point of view.

The type of portfolio or box chosen to protect a particular item should be appropriate for the item's format, size and weight, value, and projected use. Simple portfolios constructed to protect seldom-used materials for which binding is inappropriate or unfeasible can often be made from "scraps" that are left over from other procedures. A lightweight portfolio, however, is only suitable for lightweight items. Heavier items, or items that warrant a more durable enclosure because of expected use, can be protected by a "phase box," or four-flap portfolio, made from heavy-duty **boxboard**. The phase box illustrated in this manual is a modified version of the phase box designed by conservators at the Library of Congress.[12]

A custom-made, cloth-covered "double tray box"[13] constructed from heavy-duty binder's board or alkaline **matboard** has long been a standard conservation treatment for rare books. Providing a protective box for a book can be an alternative to rebinding or time-consuming repair. Physical treatment can disrupt or obscure important bibliographic, historic, or artificial evidence of a binding contemporary with the period of the book's production. In addition, when full conservation treatment has been provided, a protective enclosure is a logical addendum. Protective enclosure is also chosen when specific treatments for a particular item are questionable and better methods may be developed in the future with improved technology and continued research.

Most frequently, however, enclosure is chosen because libraries simply do not have the resources to do all the conservation treatment needed to stabilize the *physical condition* of a damaged item. Enclosure can be a holding measure that protects items from further mechanical damage while awaiting treatment in the future. On the other hand, even if there were enough time and money to treat every book that needed it, that would not always be the best decision in terms of the collection or the individual items. Enclosure can be an option when rebinding or conservation treatment cannot be justified in terms of a damaged book's expected use or **intrinsic value**.

As a conservation measure, enclosure is highly recommended for retrospective materials because it provides maximum physical protection from environmental hazards with a minimum expenditure of time, skills, and materials.

Protective enclosure in a portfolio or box will not solve the problem of a book with brittle paper that is needed for use. Enclosure can be a holding measure, but further treatment will be needed if a brittle item is to be returned to usable condition.

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[11]See item 39 of the Selected Bibliography.

[12]For a more in depth discussion of LC's phased conservation program, see item 3 of the Selected Bibliography.

[13]Also called Solander box, drop-spine box, clam-shell box, three-piece folding box, rare book box, etc. The Solander box named after David Solander (d.1782), a Swedish botanist working at the British Museum, was actually a leather-covered wooden case intended for the protection of botanical specimens.

Preservation microfilming is the technique typically chosen to preserve the *information* contained in books with brittle paper. However, there are many instances when preservation of the original text pages is preferred. A title may contain illustrations, especially in color, that are not adequately reproduced by microfilming. And, items such as atlases may be more useful to the library patron when preserved in their original format. In addition, some items have artifactual or intrinsic value that should dictate retention of the original.

One practical technique for preserving original, brittle pages in a book involves separating the text into individual leaves, neutralizing and alkaline buffering the paper, encapsulating each leaf in polyester film, binding the leaves together, and providing a hard cover. Although time-consuming, the construction of a polyester book is a preservation alternative to microfilming materials that should be kept in their original format. However, a polyester book will obviously not resemble the original and may not be a satisfactory alternative for an item whose binding is of historic interest. In this case, retention of the binding **fragments** (such as decorated cover boards) combined with **photodocumentation** of the original, may adequately preserve important information about the original binding.

ORGANIZING AND SUPERVISING THE CONSERVATION WORKSHOP

Priorities and Decision Making

Before a hand is lifted in treatment, a library should first determine conservation priorities based on the nature of the collection and how it is used. For example, a college library whose collection is heavily used by undergraduate students should probably concentrate on simple book repair for current material, while a historical society library might emphasize the protective enclosure of manuscripts and rare books.[14]

To a library embarking on an expanded conservation program, the amount of work to be done may seem overwhelming. Therefore, priorities should start with those activities that will have the most significant and immediate impact on the condition of the collection as a whole. For example, with the goal of preventative maintenance in mind, a library might survey their collection and concentrate on simple book repairs before embarking on more complicated and time-consuming conservation procedures. Priorities should be periodically reevaluated as the overall maintenance of a collection is enhanced. For example, a library that first concentrated on routine book repair for heavily used collections might follow with a systematic program of protective enclosure for older, retrospective materials of permanent research value.

Once priorities are determined, a library should standardize criteria for treatment decision making. This does not mean that every item in a similar state of disrepair will receive the same treatment, but rather that treatment decisions will be based on a standard method of evaluation. A treatment decision is based on the current and projected condition of an item, its intrinsic value, and its current and projected use.[15] However, each library should determine its own specific criteria based on the nature of the collection. For example, it is logical that the same damaged book about native Americans published in 1874 could receive different treatment at two different

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[14]See appendix 2, "Developing In-House Capabilities: Profiles of Four Hypothetical Libraries," for an example of matching priorities to the needs of a particular collection.

[15]See appendix 1, "Decision-Making Checklist for Book Repair," for an example of a decision-making strategy.

2
Book Repair Procedures

TIGHTENING THE HINGES OF A CASE-BOUND BOOK

Problem
- Text block sagging or pulling away from its cover.

Causes
- Inadequate publisher's binding, especially poor **adhesion** in the hinge area.
- Damaging book return systems.
- Improper shelving practices, especially fore-edge shelving and leaning books.
- Rough handling or dropping.
- Inadequate rounding and backing or a flat-back spine, especially on a heavy book.
- Normal wear and tear from frequent use.

Treatment
- Tighten the attachment of the text block to its cover by applying glue into the hinge area.

Cost
- Batch production at approximately 5 minutes per item.
- Materials cost per item negligible.

Equipment and Supplies
- Book press
- Metal-edged pressing boards
- Knitting needles, metal (two sizes)
- Bone folder
- Glue brush
- Artist's oil painting brush (long, narrow brush with short bristles)
- **Polyvinyl acetate (PVA) adhesive** (dilute 5:1, PVA:water)
- Waxed paper
- Empty dish-detergent bottle (or other narrow container approximately 25 cm tall)

Operating Procedures—Typical Sequence

1. Select for repair when the book is loose in the hinge area, but its super and endsheets are still intact (photo 1).
2. Place the book on its tail with the cover open. When the hinges are loose, the text block can be pressed away from the cover, exposing the inside of the hinges (photo 2).
3. Dip a knitting needle of appropriate size into a tall, narrow bottle filled with slightly diluted PVA. The needle should be coated completely with glue.
4. Carefully insert the needle into the hinge area between the spine of the text block and the spine of the case, and roll the needle into the joint (photo 3). Care must be taken not to get glue on the spine, or the book will be severely stressed when opened.
5. Lay the book flat and **bone** in the hinge (photo 4). Repeat steps 3, 4, and 5 for the other hinge.
6. Open the covers and place waxed paper between the cover board and the text block to prevent any glue seeping through from damaging the paper in the inner hinge.

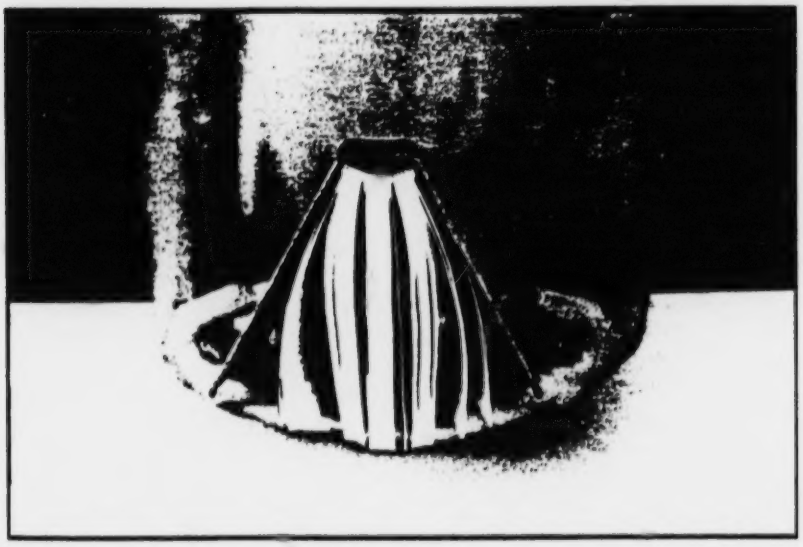
7. **Press** the book between metal-edged boards in a book press (photo 5). The metal lips on the boards press into the hinge areas as the book press is tightened.

Special Instructions

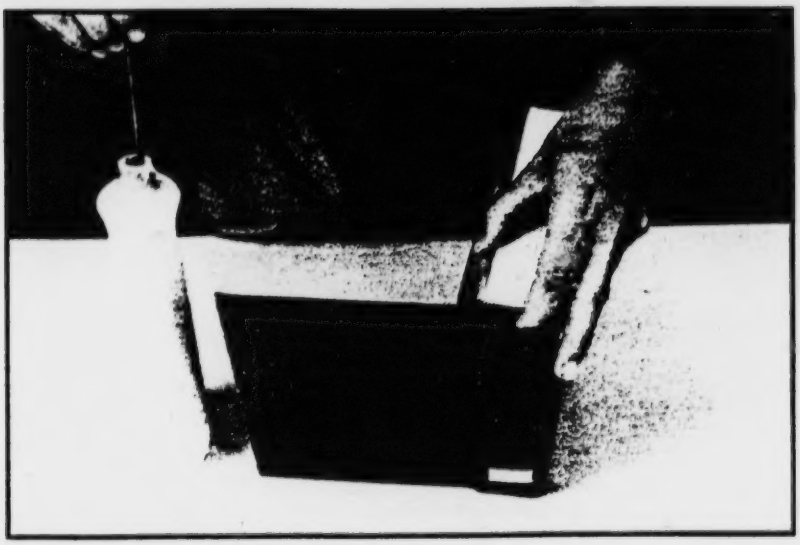
- A book may be only slightly loose in the hinge areas, or the super and endsheet may have lifted several inches off the cover board. In both instances, the purpose of the repair is to secure the book in its case by regluing the parts that have lifted away. This very simple repair is possible only when the endsheets and super are intact (not torn).
- If the loose area is large, a brush should be used to apply the glue.
- If a whole batch of "tightening hinges" are being done, books can be removed from the press after 15 minutes and laid flat on top of each other (staggered spine to fore-edge) until they are completely **dry**.

TIGHTENING THE HINGES OF A CASE-BOUND BOOK

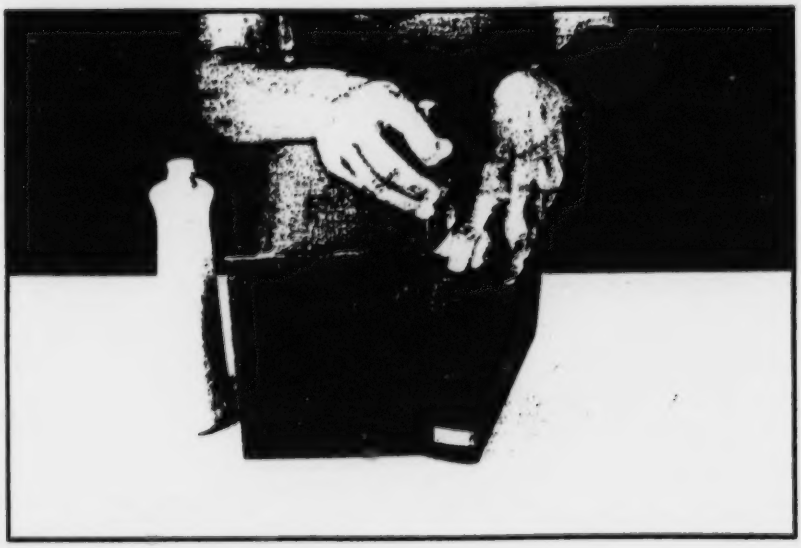
Illustrated



1—Select for repair when the book is loose in the hinge area.

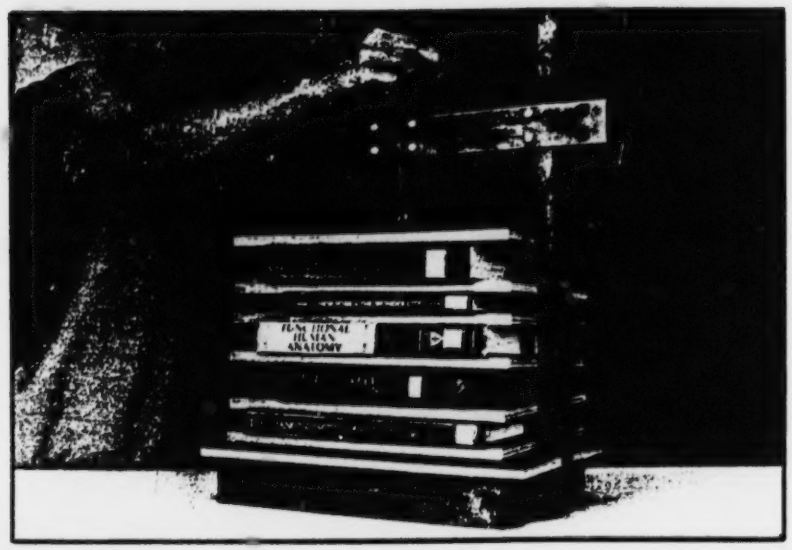


2 – Press the text block away from the cover to expose the inside of the hinges.



3 – Insert a knitting needle covered with glue into the hinge area and roll it into the joint.

4—Lay the book flat and bone in the hinge.



5—Press the book between metal-edged boards in a book press.

DOUBLE-TRAY BOX

Problem

- Damaged or deteriorated book for which rebinding or full conservation treatment is inappropriate or unfeasible.
- Rare or valuable book which would benefit from additional protection.
- Unbound item or group of prints or manuscripts for which binding is inappropriate.
- Fragile or vulnerable binding that would sustain physical or mechanical damage if left unprotected, including books with elaborate gold tooling or an unusual format.

Causes

- Breakdown of the binding structure due to deterioration or aging of component materials, especially the acid-deterioration of vegetable-tanned leather.
- Damage to the binding from exposure to excessive heat, ultraviolet light rays, dirt, dust, and atmospheric pollutants such as sulfur dioxide and ozone.
- Damaged binding due to inadequate original binding, especially overpared leather in the hinge area and weak attachment of the cover boards.

Treatment

- Enclose the item in a box made from alkaline binder's board covered in buckram and lined with alkaline paper:
  - —The box should fit the item exactly and permit easy removal.
  - —The box acts as a buffer against fluctuations in temperature and humidity, and protects from dust, light, atmospheric pollutants, abrasion, and mechanical damage.

Cost

- Batch production at approximately 1½ hours per box.
- Materials cost approximately $3.00 per box.

Equipment and Supplies

- Board shear
- Stamping press, type, type cabinet, rubber-tipped electrician's clamps, tweezers, stamping foil
- Cork-backed metal ruler
- Triangle
- Glue brushes
- Scissors, embroidery or surgical
- Shears
- Scalpel
- Spatula
- Wrapped lead weights
- Bookboard, "Acid-pHree" Davey Red Label®, caliper .082
- Buckram, starch-filled in assorted colors
- Lining (endsheet) paper, alkaline
- Polyvinyl acetate (PVA) adhesive (dilute 3:1, PVA:water)
- Starch paste, wheat or rice
- Soft cloth
- Wastepaper
- Waxed paper

Operating Procedures—Typical Sequence

1. Measure the length (l), depth (d), and width (w) of the book (photos 1-3) and record the measurements on the Calculation Form for Box Components (fig. 4.3).

	Inside Tray				Outside Tray				Cover	
Book	2 sides	fore-edge	base		2 sides	fore-edge	base		2 covers	spine
L_____ + 6mm		= Lf_____	= Lb_____	+ 7mm		= Lf_____	= Lb_____	+ 5mm = Lc_____		= Lsp_____
W_____ + 1mm =	Ws_____		+ 3mm = Wb_____	+ 3mm =	Ws_____		+ 2mm = Wb_____	+ 3mm = Wc_____		
D_____ + 1mm =	Ds_____	= Df_____		+ 4mm =	Ds_____	= Df_____		+ 3mm		= Dsp_____

Fig. 4.3. Calculation Form for Box Components.

2. Calculate the dimensions of the box pieces by filling in the form.
3. Select a piece of bookboard and, following the form, cut pieces for the *inside tray* (two sides, one fore-edge, and one base piece); *outside tray* (2 sides, one fore-edge, and one base piece); and *cover* (two cover boards and one spine piece) (photo 4) (fig. 4.4) All pieces, except the side pieces, should be cut with the grain direction of the board parallel with the spine of the box.

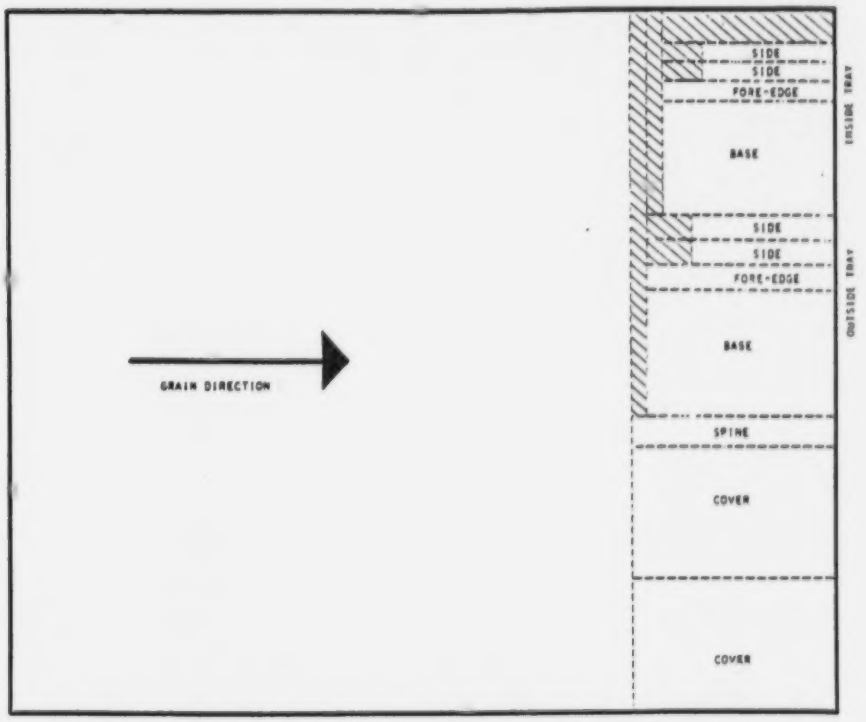


Fig. 4.4. Cut bookboard pieces for the double-tray box.

4. Assemble the inside tray.
   a. Using a small glue brush, apply glue to the bottom edge of the fore-edge piece (photo 5).
   b. Position the fore-edge piece on the baseboard and brace it with lead weights so that it is perpendicular to the base (photo 6).
   c. Apply glue to the bottom and one edge of a side piece and position it on the base board at a right angle to the fore-edge piece (photo 7).
   d. Repeat for the other side piece and brace the tray, weighting the corners (photo 8).

5. Repeat step 4 for the outside tray. Allow the trays to dry thoroughly. The outside tray should fit exactly without being tight over the inside tray (photo 9).
6. Cut buckram strips to cover the sides of the trays (photo 10). The grain direction of the cloth (as indicated by the selvage edge) should run the length of the sides. Each strip is equal to twice the length of the sides plus the length of the fore-edge plus 3 cm for turn-ins. The strip is cut wide enough to cover both sides of the tray wall plus 3 cm for turn-ins.
7. Apply glue to the outside of one tray side and position it on the wrong side of the buckram strip, leaving a turn-in allowance of 1.5 cm on the end and bottom of the base (photo 11). Smooth the buckram and use a bone folder to ensure adhesion. Apply glue to the outside of the fore-edge side (photo 12), turn the tray, and place the side on the buckram, keeping the cloth taut as the tray is turned (photo 13). Glue and attach the remaining side (photo 14).
8. Clip the buckram at the corners of the bottom of the base (photo 15). Make further cuts and clips at the corners in preparation for covering the inside tray walls (photos 16-19).
9. Apply glue and turn in the buckram on the sides and bottom of the tray as illustrated in photos 20-24. Carefully bone in joints and corners.
10. Repeat steps 7-9 for outside tray.
11. Construct the box cover.
    a. Cut a rectangle of buckram for the cover, allowing 2 cm turn-ins and hinges equal to twice the thickness of the boards.
    b. Attach the spine piece to the buckram and stamp author and title. (See steps 9-12 of "New Cover.")
    c. Attach the cover boards to the buckram (photo 25), trim the corners, and turn excess buckram onto the cover boards (photo 26).
    d. Cut a strip of buckram equal to the length of the inside tray by the width of the spine plus 5 cm. Attach the strip to the inside of the spine (photo 27) and bone in the joint (photo 28).
12. Cut two sheets of alkaline paper to line the trays; each sheet is 2 mm less than the length and 2 cm wider than the inside dimensions of the corresponding tray (photo 29). The grain of the paper should run parallel to the spine.
13. Apply paste to the paper, brushing in the direction of the grain (photo 30). Allow the **paper fibers** to relax, i.e., the paper loses its curl and becomes limp. Holding the paper by opposite corners, lower it into the tray and rub in place with a soft cloth (photo 31). Turn the excess paper onto the bottom of the tray.
14. Lay the box cover face down, making sure the stamping is not upside down! Apply a generous amount of glue to the bottom of the outside tray (photo 32) and position it on the left side of the cover. Line up the open edge of the tray *exactly* with the edge of the cover board (photo 33).
15. Test the position of the inside tray by holding it against the right side of the cover while holding the glued outside tray securely in place (photo 34). Glue the inside tray in place.
16. Weight the trays with lead weights, especially the corners and edges (photo 35).
17. The book should fit exactly in the inside tray without rubbing against the tray sides (photo 36). The covered trays should fit snugly together (photo 37).

Special Instructions

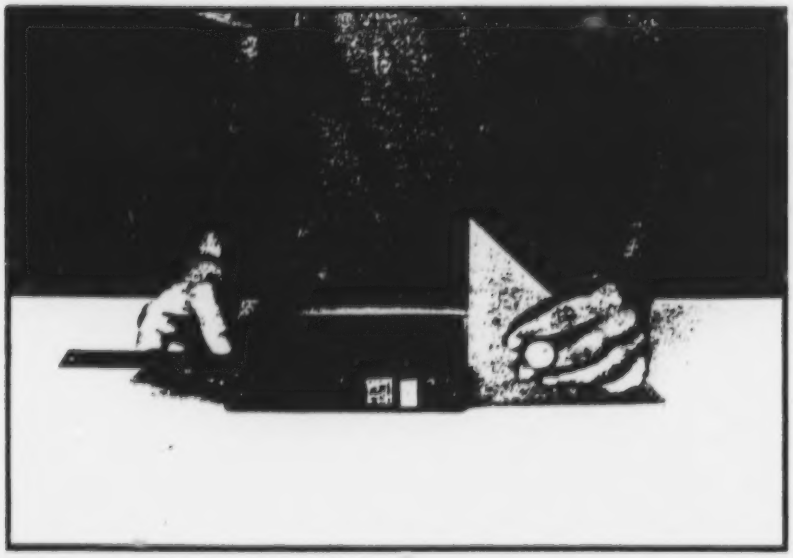
- Custom-made boxes are available from individuals and commercial firms. Accurate measurements are essential for construction of a properly fitting box when the maker does not have the book in hand.
- **Pryroxlin-coated buckram** and bookcloth are durable covering material, but not suitable for use on trays. A combination of a buckram cover with contrasting bookcloth or marbled paper sides makes an attractive box. A leather label on the spine adds distinction to a box.
- When there are slight variations in the size of individual volumes of a set, the trays should

be made to fit each volume exactly, but the covers should be made a uniform height. The printing on the spines should also be uniform.

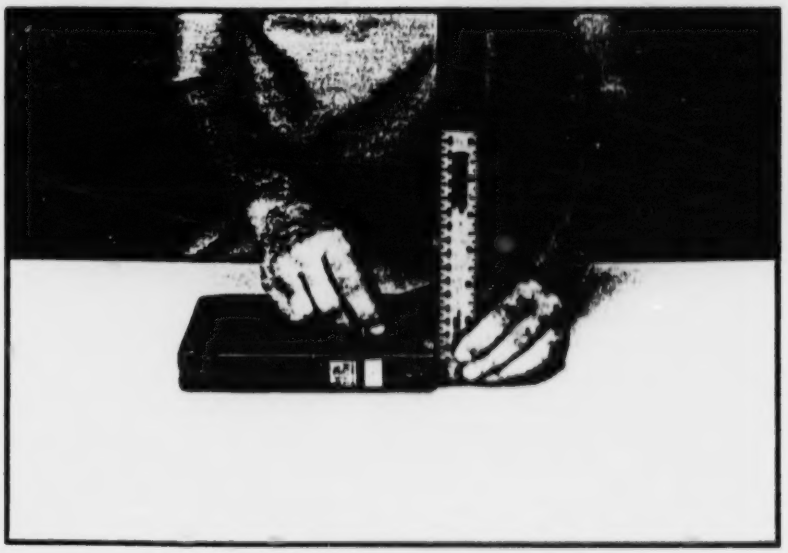
- If the trays are lined with paper and allowed to dry completely before being attached to the cover, the box will warp. It is best to line the trays immediately before they are attached to the cover.
- Double-tray boxes for most books can be constructed from .082 bookboard. If appropriate, another thickness of board can be used. However, the measurement form in figure 4.3 would have to be adjusted accordingly. Formulas may also need to be adjusted for different covering materials.
- Some books, particularly very valuable books or books with structural peculiarities, may warrant construction of special boxes with special features.

DOUBLE-TRAY BOX

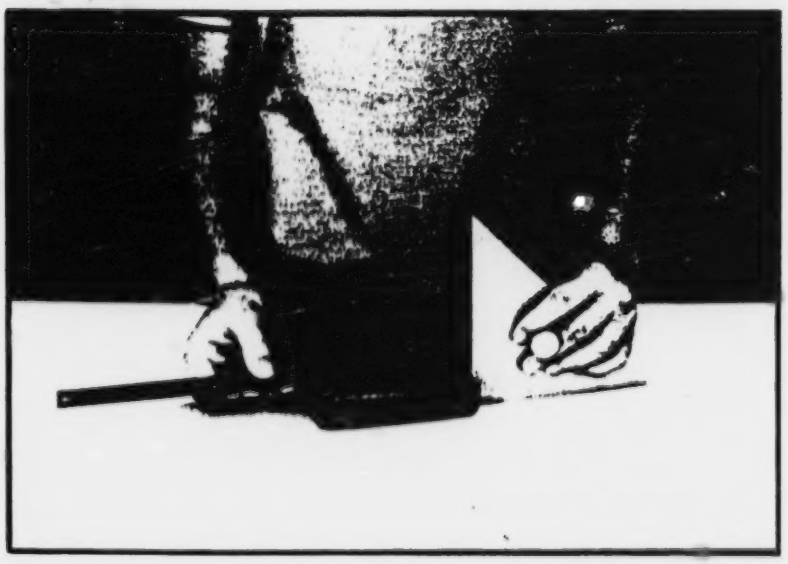
Illustrated



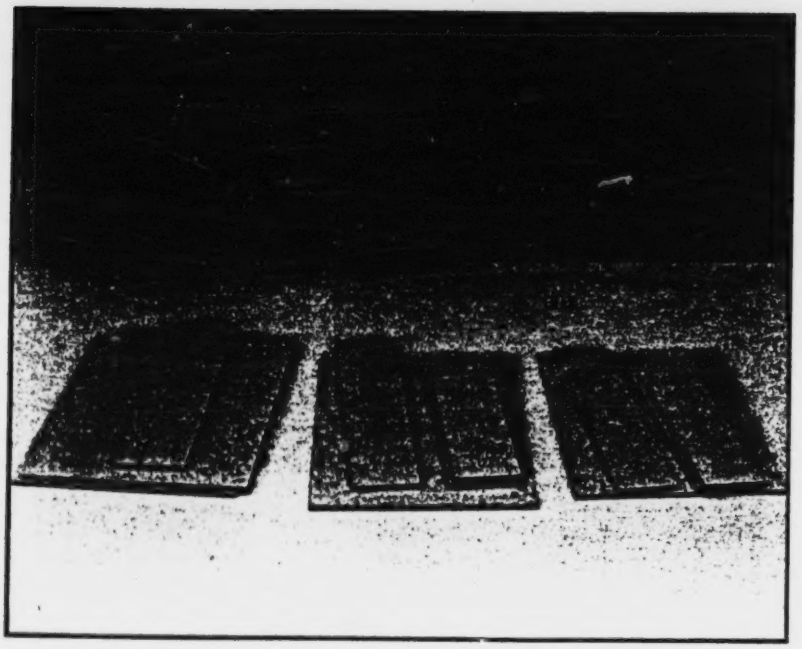
1—Measure the length (l) of the book.



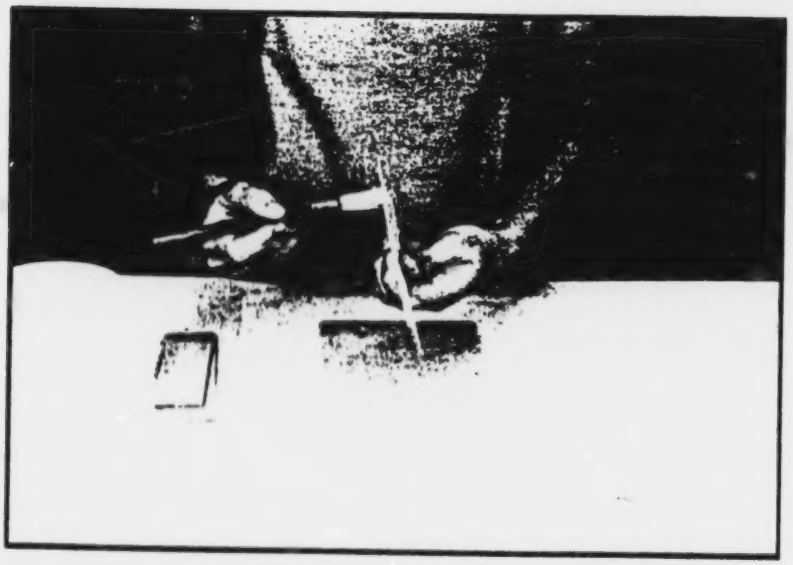
2—Measure the depth (d) of the book.



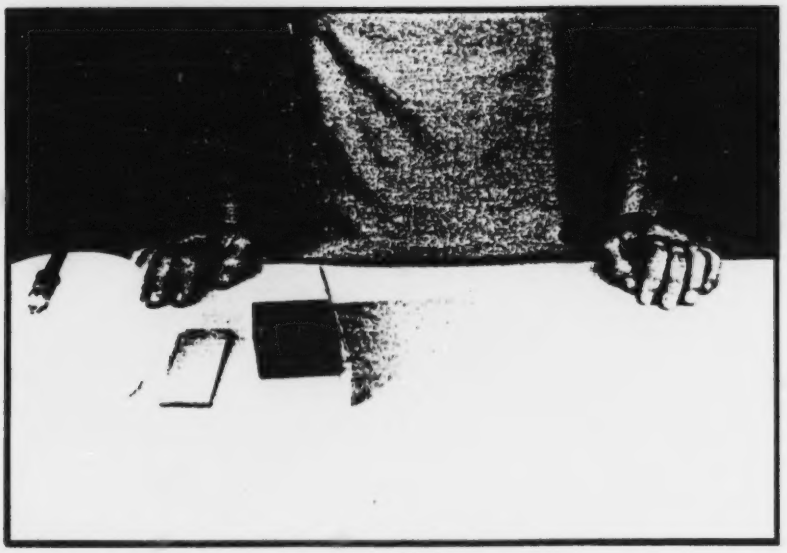
3—Measure the width (w) of the book.



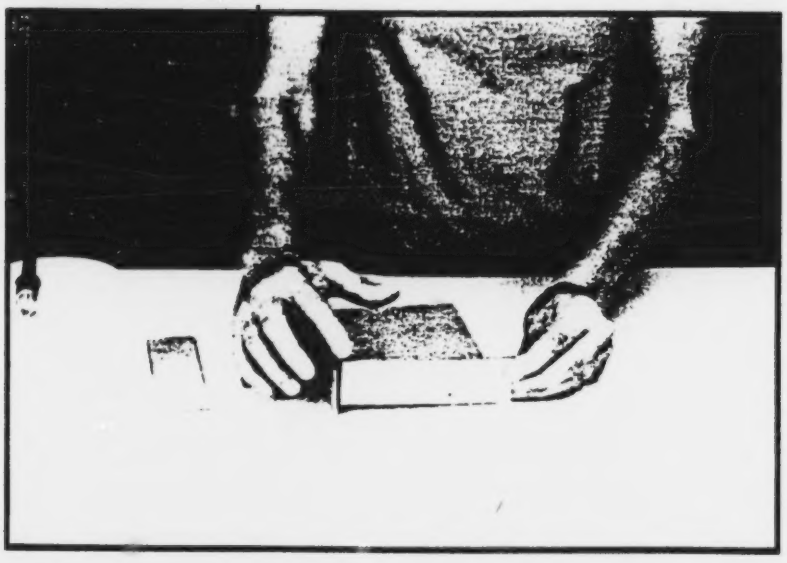
4—Cut the box pieces.



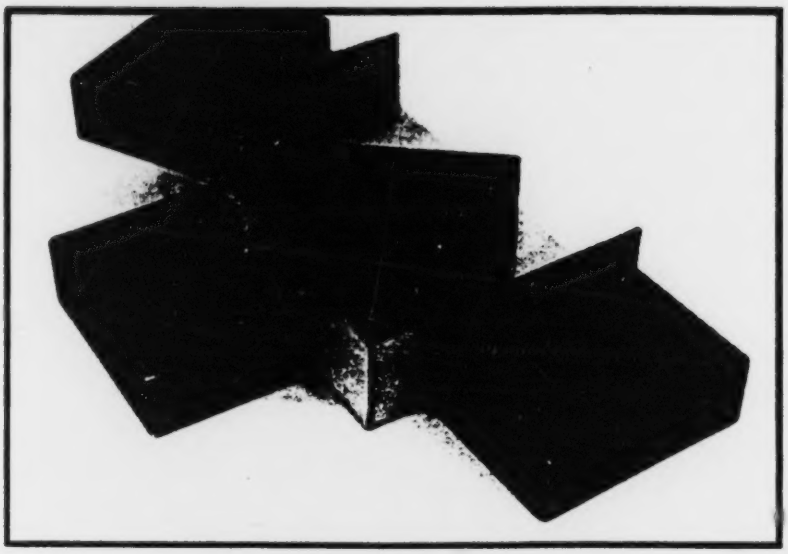
5—Apply glue to the bottom edge of the fore-edge piece.



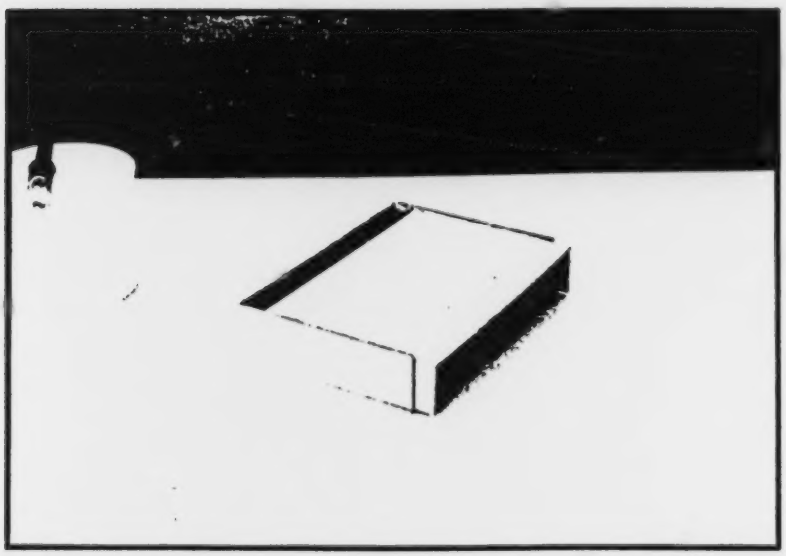
6—Position the fore-edge piece on the base board.



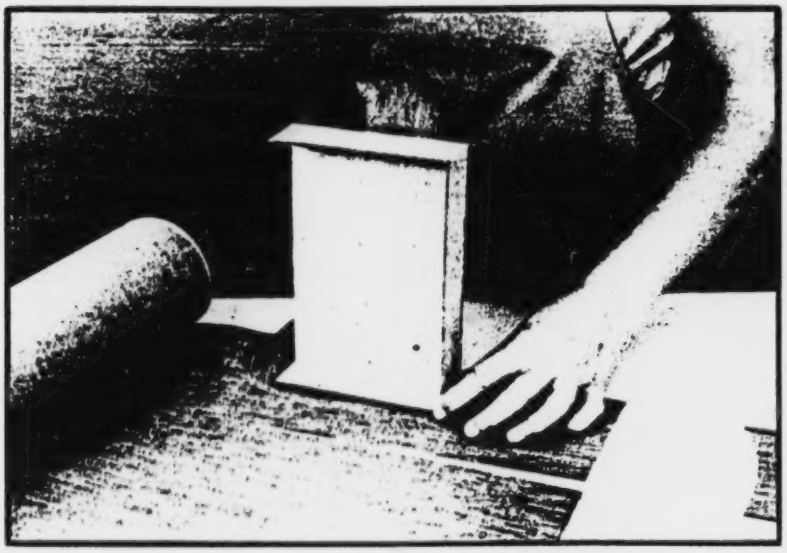
7—Position the side piece on the base board at a right angle to the fore-edge piece.



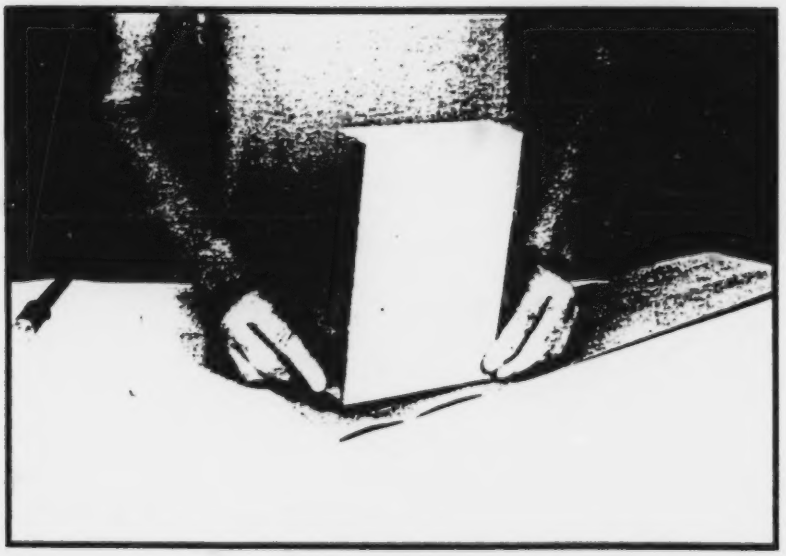
8 – Brace all three sides of the tray and weight the corners.



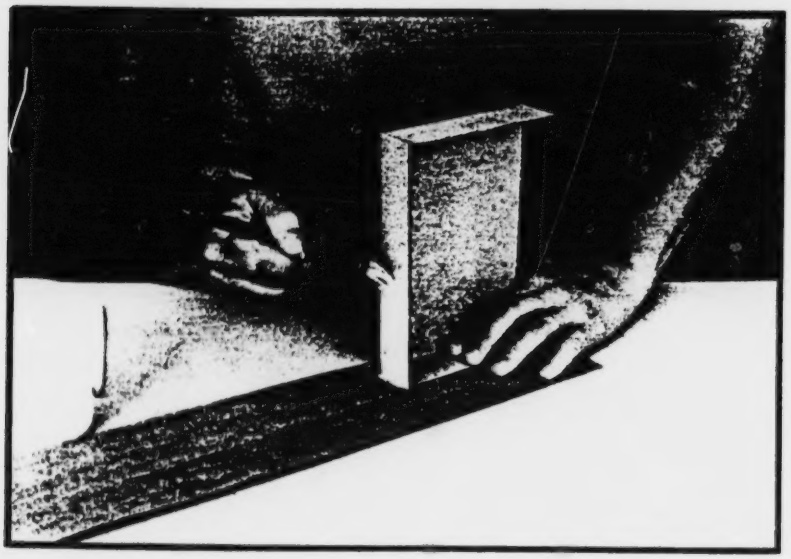
9 – The outside tray should fit exactly over the inside tray without being tight.



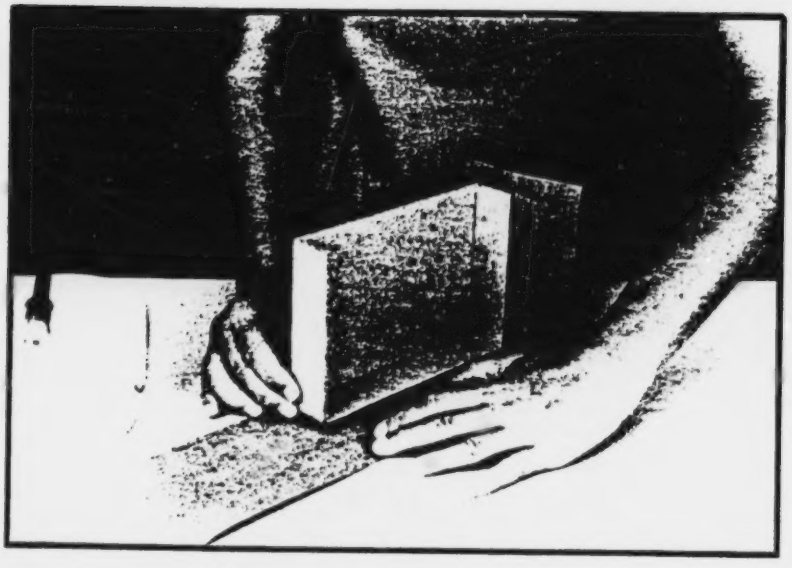
10—Cut buckram strips to cover the sides of the trays.



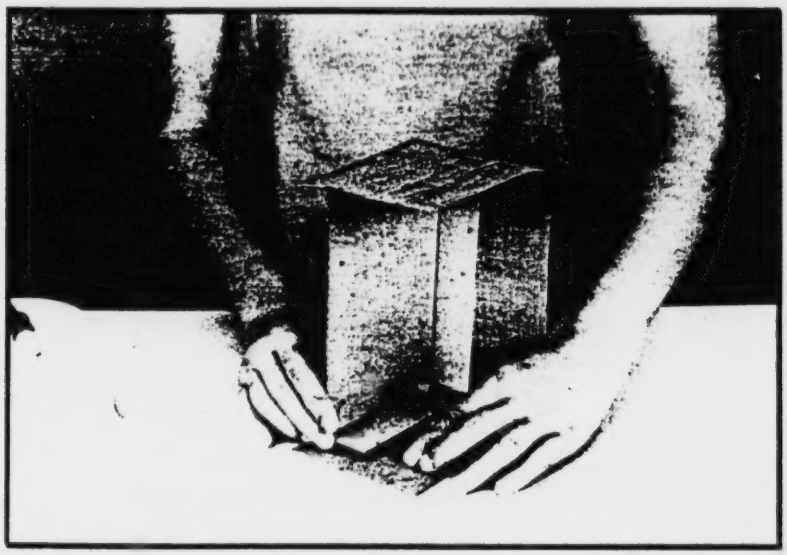
11—Position the side of the tray on the buckram strip.



12—Apply glue to the fore-edge sides.

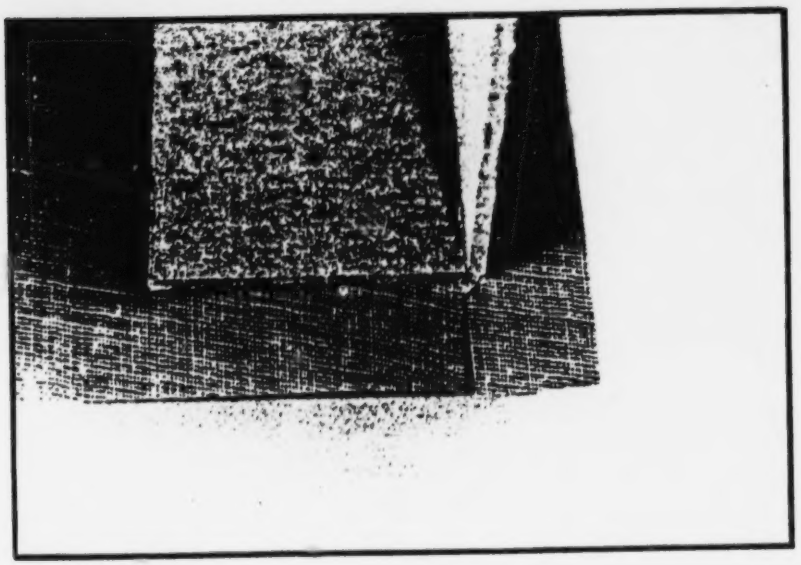


13—Keep the cloth taut as the tray is turned.

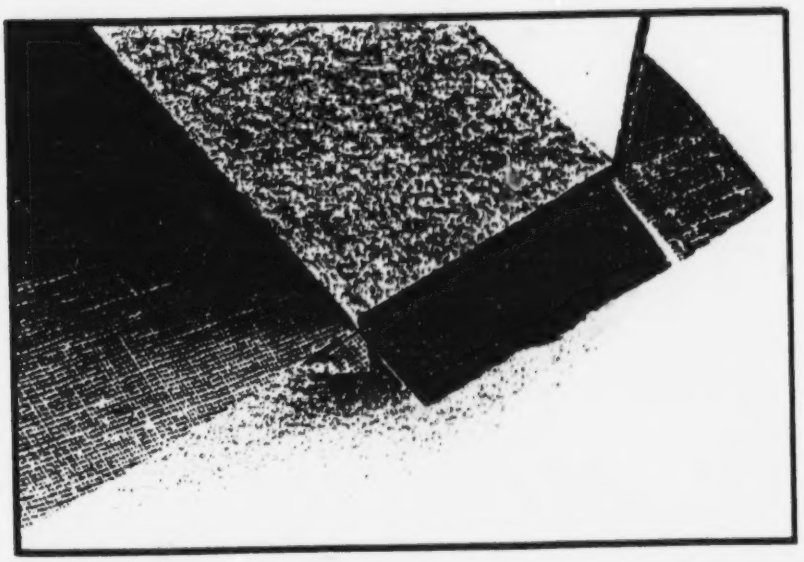


14—Glue and attach the remaining side.

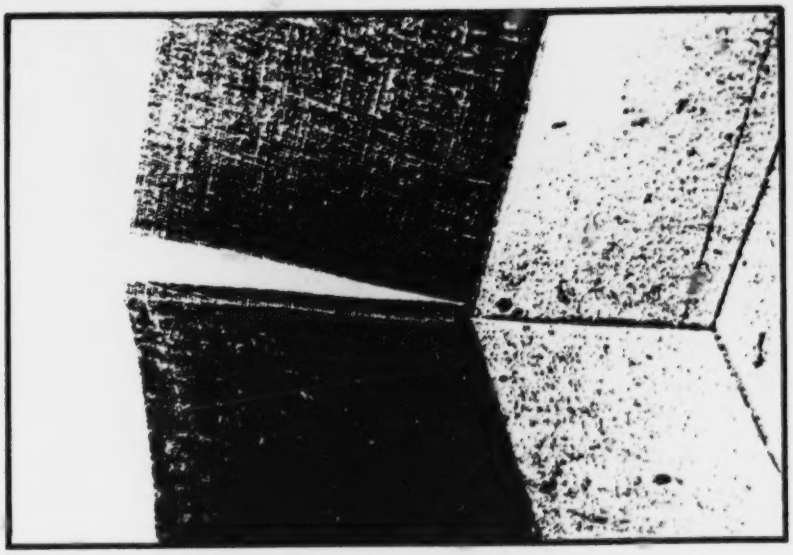
15—Clip the buckram at the corners.



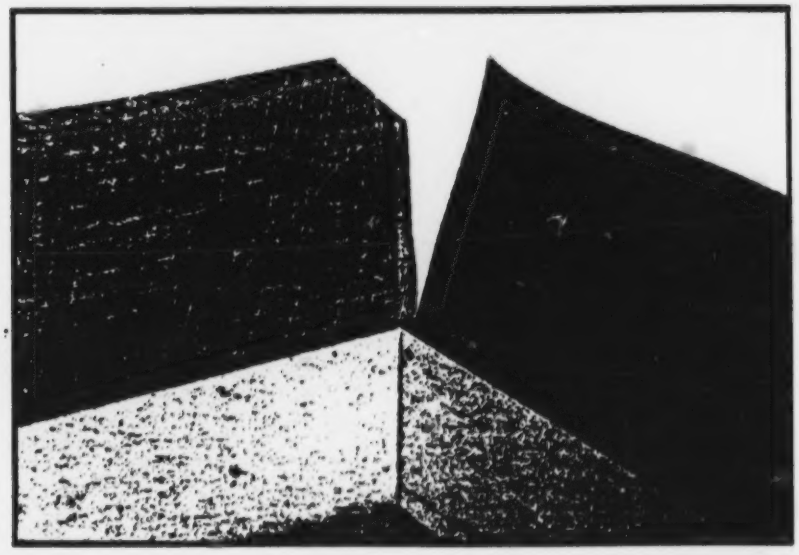
16—Clip no. 1.



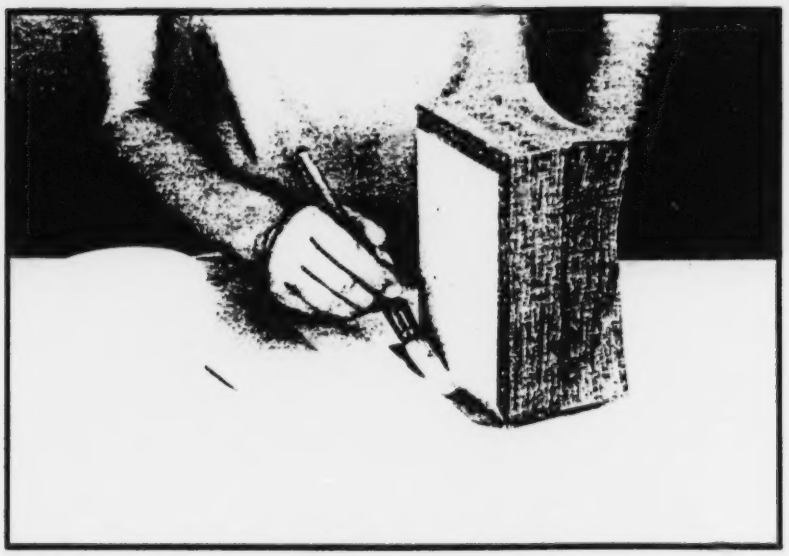
17—Clip no. 2.



18—Clip no. 3.

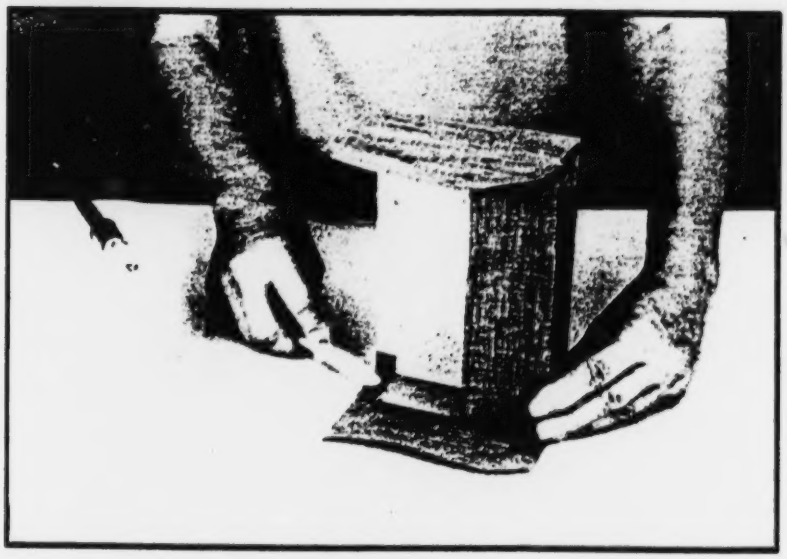


19—Clip no. 4.



20—The cloth on the bottom of the tray is turned in.

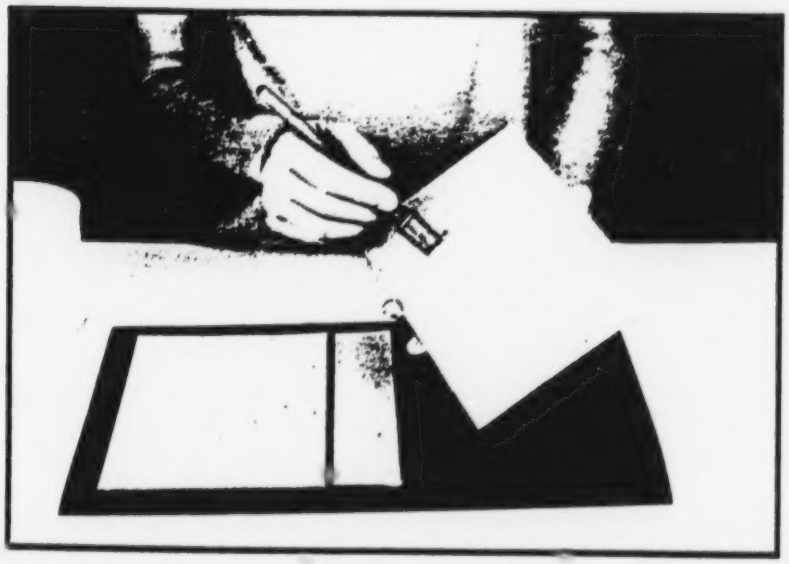
21—Tabs cover the inside corners.



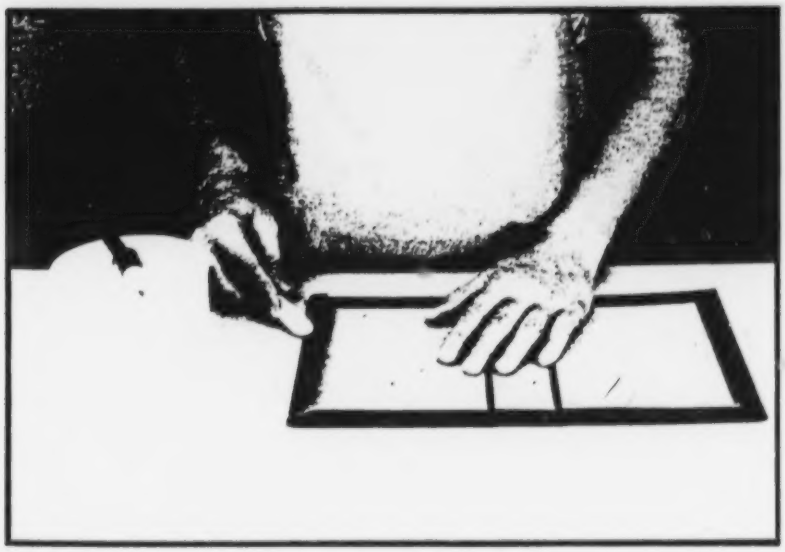
22 – The large tab covers the edge of the tray side.

23 – Apply glue and turn in the cloth on the inside of the tray side.

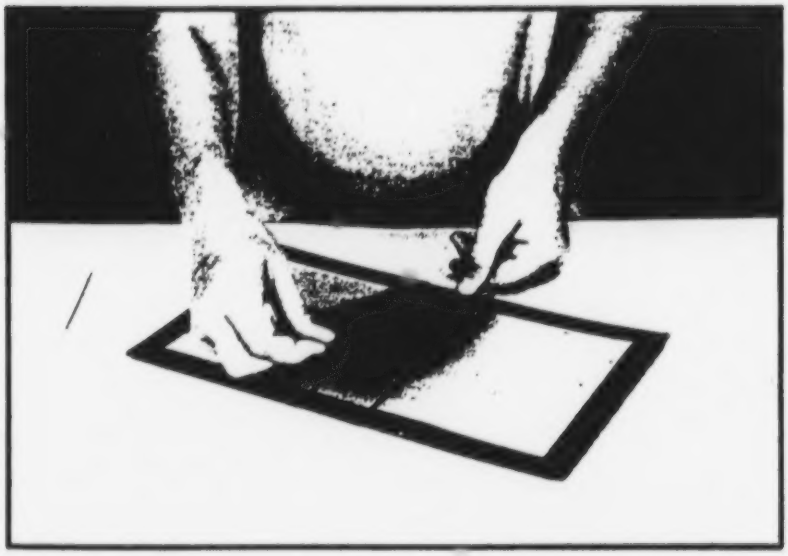
24—Turn in the cloth on the inside of the tray fore-edge.



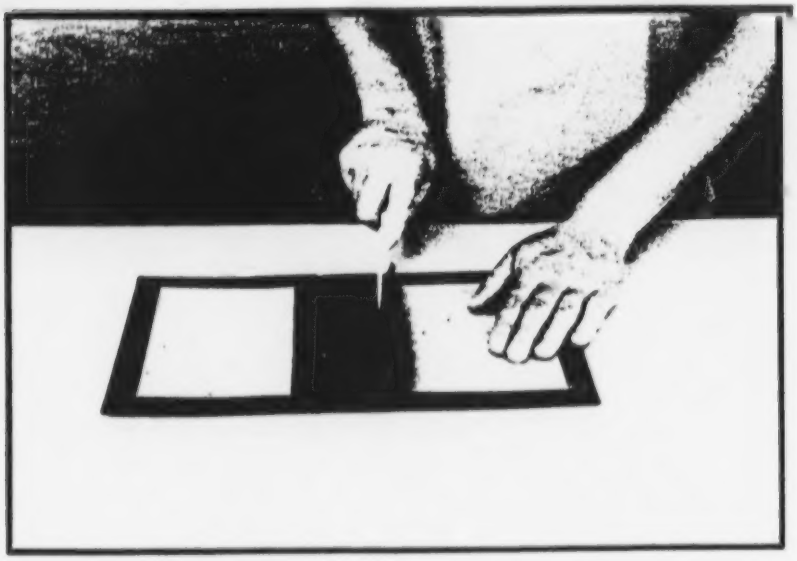
25—Attach the cover boards to the buckram.



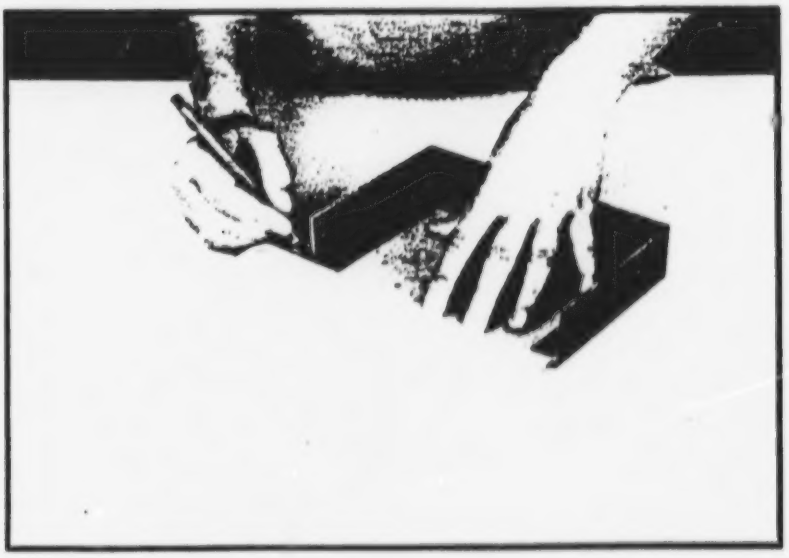
26 – Turn the excess cloth onto the cover boards.



27 – Attach a buckram strip inside of the cover spine.

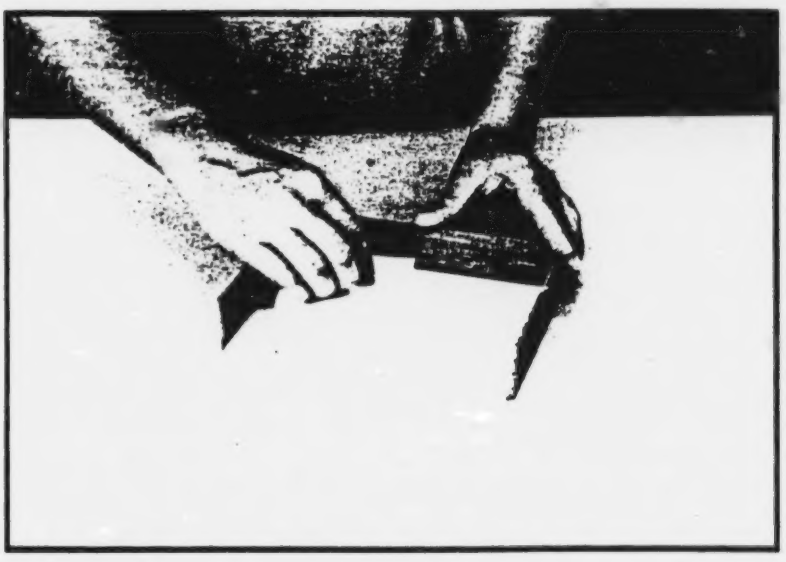


28—Bone securely in the joints.

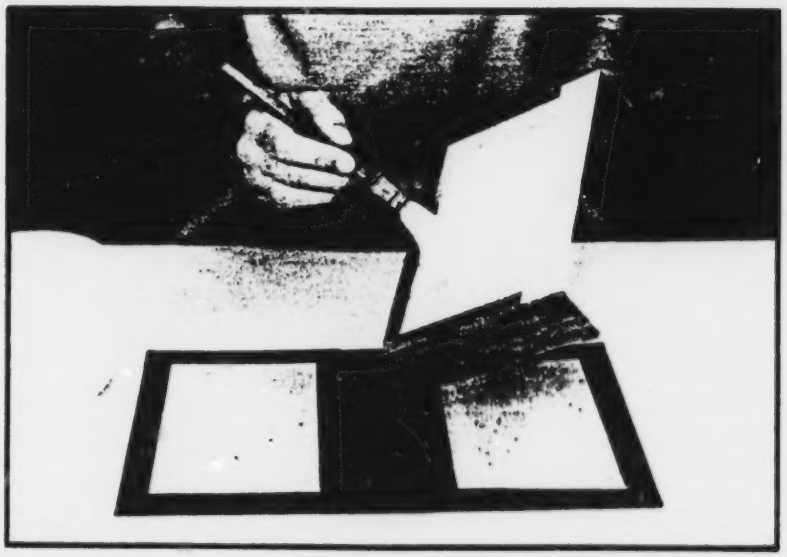


29—Cut paper to line the trays.

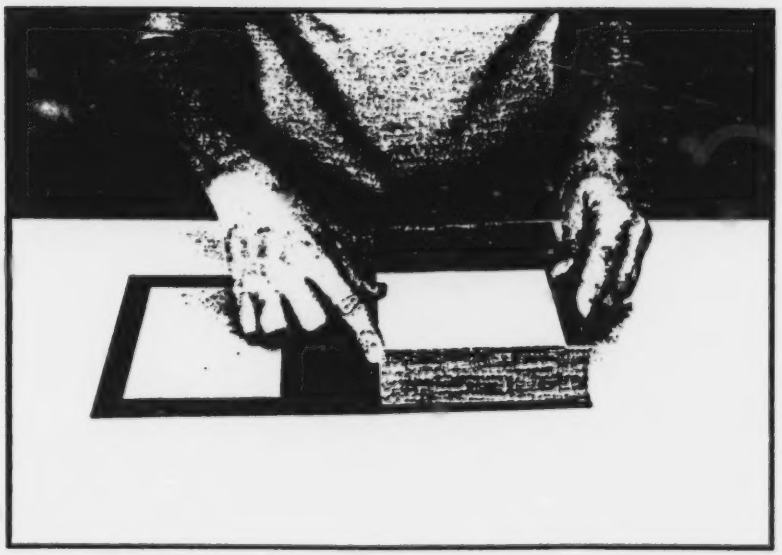
30 – Apply paste, brushing with the grain of the paper.



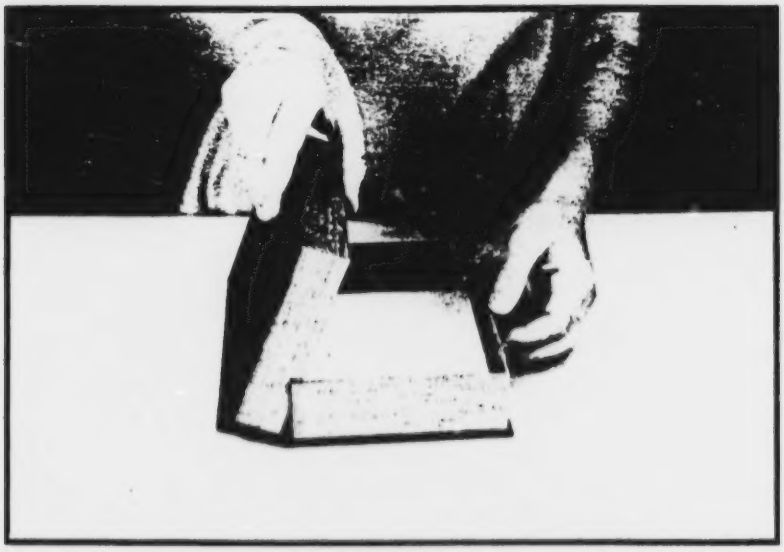
31 – Rub the paper lining down with a soft cloth.



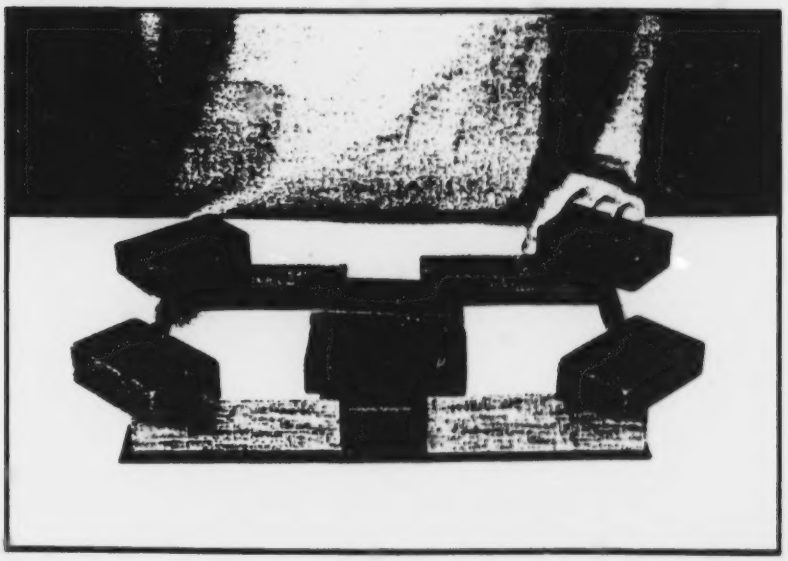
32 – Apply glue to the tray bottom.



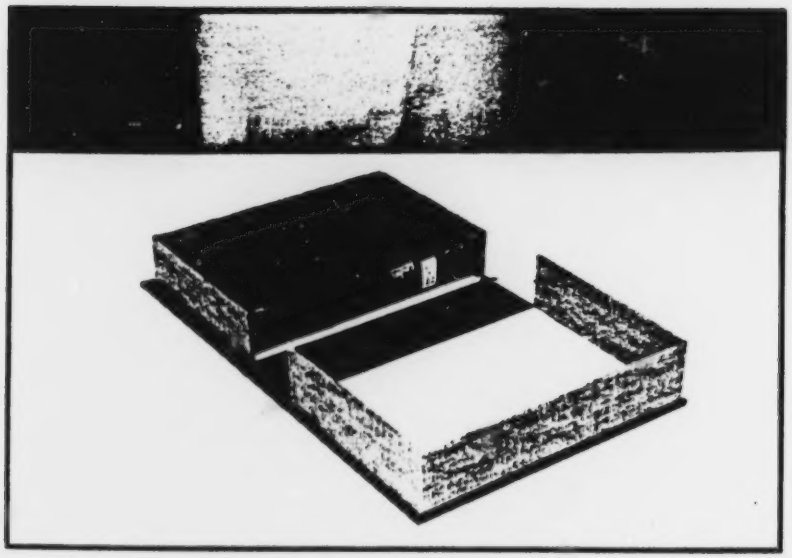
33 – Line up the open edge of the outside tray exactly with the edge of the cover board.



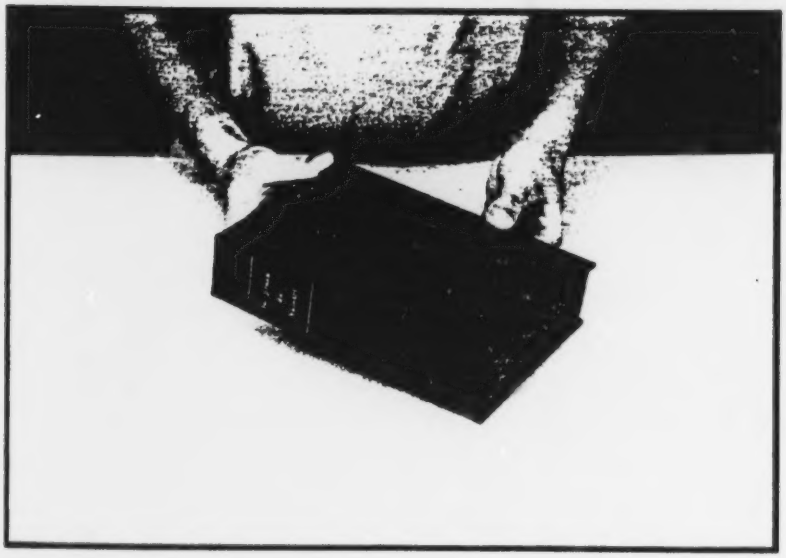
34—Test the position of the inside tray.



35—Weight the trays.



36—The book should fit exactly without rubbing against the tray sides.



37—The covered outside tray fits snugly over the inside tray.

Appendix 1
Decision-Making Checklist for Book Repair

The decision-making process for book repair involves asking questions that can be answered by examining the book. Most of these questions can be answered easily because most repair problems are routine and quickly identified. However, individual decisions are still made on the basis of expected use, book condition and structure, available options, and costs.

Seriously deteriorated items that cannot be easily repaired in-house should enter a different decision-making process. This category would include brittle books (paper suffering from acid deterioration), or books that would require hours of tedious repair or treatment. In addition, some items may need treatment that is beyond the expertise of local personnel. The issues of withdrawal, retention and extensive conservation treatment, or reformatting are collection development decisions more appropriately left to bibliographers, subject specialists, or collection development officers.

The following questions are representative of the decision-making process. In practice, the answers usually come automatically, and decisions can be made quickly and efficiently.

How Is the Book Constructed?

- Is the book small, average, or large? How will it be shelved? Is the text block thick or thin?
- What is the method of leaf attachment? Sewn-through-the-fold? Sewn over tapes? Adhesive-bound? Side-sewn? Oversewn?
- Is the page attachment intact, or is the text block broken apart or loose and separated in spots?
- Is the text block rounded or flat backed? Has the spine become concave or started to sag?
- How wide are the inner margins?
- Is the original binding on the book or has it been rebound?
- Has the book been previously mended? If so, with what materials? Are the mending materials permanent, or are they causing damage or stress to the structure of the book?

Is the Cover Protecting the Text Block?

- Is the text block loose in its case?
- Are the endsheets torn at the hinge?
- Is the super intact or is it torn?
- Have the endsheets or the super lifted away from the coverboards?
- Are the linings on the spine adequate? Are they deteriorated or detached?
- Is the cover material made of cloth, paper, leather, or a combination of materials? Is the cover soiled or torn? Is it seriously faded?
- Is the lettering on the spine legible? Is the call number legible?
- Are the hinges of the cover deteriorated or torn?
- Is the head or tail worn?
- Are the corners of the cover broken? Frayed? Worn and rounded?
- Has the cover been vandalized? Spilled on, dog-chewed, slashed, or soaked?

What Is the Condition of the Paper?

- Is the paper strong and flexible? Is it soft, pulpy, and weak? Is it brittle, e.g., does it break off when a corner is flexed?
- Is the paper coated so it's slick and glossy? Does the book contain plates printed on coated paper?
- Are there torn pages?
- Has the paper been mended with pressure-sensitive tape?
- Is there evidence of acid migration from the cover or endsheets onto the text block?

Does the Book Have an Unusual Format or Other Feature?

- Are the endsheets important to the content of the book (e.g., maps or illustrations)?
- Are there plates or maps? Are any missing? Are any loose?
- Are there missing or mutilated pages?
- Are there pages or plates that fold at the fore-edge? Are there maps that fold out?
- Is there pocket material?
- Are there loose errata slips?
- Have the bolts of the sections been cut?

How Will the Book Be Used?

- Will the book be heavily used? Will it be infrequently used?
- What is the subject of the book?
- What is the date of publication?
- Is it a reference book? How is it used?
- How often has the book circulated in the past year? The past five years?
- Are there other copies in the library? In what location?
- Are there newer or older editions of the work? Does the library own them?
- Has the book been reprinted?
- Will this edition be superseded? When?
- Is the book part of a multi-volume set? Have any of the other volumes been previously rebound or repaired?
- Is the book one volume of a serial publication? What is the condition of the rest of the holdings?

What Will It Cost to Repair the Book?

- Can the book be easily repaired?
- Does it need to be repaired quickly?
- How much time would it take to repair it? How much would the materials and labor cost?
- Who can do the work? How quickly can it be done?

Are There Other Options Besides Repair?

- Could the book be recased at a library bindery? Would that be cheaper or more appropriate than repairing the book in-house?
- Could the book be rebound at a library bindery? Hand-sewn through the fold? Oversewn? Adhesive-bound?
- Would a protective box or portfolio be more appropriate than repair?

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Number 4 September 1984

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DUPLICATE

A SIMPLE WORKSTATION FOR THE CONSERVATION OF LIBRARY MATERIALS

Having the right tools at hand and an appropriate place to work enhances the efficiency of a conservation effort. Time spent gathering supplies and tools and clearing a spot at which to work can turn a procedure, otherwise quickly accomplished, into an exercise in frustration. It is preferable to have a place set aside that is used only for conservation and is always ready to go.

The first step in designing a work station is to determine what procedures are to be done based on the nature of the collection and the type of use it receives. For example, a public library with few rare materials and a large percentage of circulating material should probably concentrate on simple repair and maintenance techniques in order to keep materials in usable condition for as long as they are needed. A historical society library would more appropriately focus on archival procedures such as polyester film encapsulation and protective encasement to stabilize the condition of their holdings. Rare or valuable materials should not be worked on more extensively, except by a professional conservator.

A simple work station of the type described below would be suitable for many routine conservation procedures, such as repair of case-bound books, the construction of simple protective enclosures, and the mending or encapsulation of maps or manuscripts.

EQUIPMENT

WORK STATION including BENCH AND STORAGE

Although any large table is adequate, a better use of the same floor space would be to have a unit which also provides storage space for tools and supplies, keeps them close at hand, and allows the work surface to be kept free. There are many possibilities for the design of such a unit. The three main requirements are 1] sturdy and stable construction, 2] a sizable, flat, washable surface such as Formica or polyurethane-coated wood and 3] provisions for storage of small tools and supplies. A system of cubbyholes and shelves under the surface and pegboard mounted on the wall would help to keep things organized.

Specifications for height are an individual matter. The work surface should be high enough to work at comfortably while standing. Depending on the worker's height, this is usually somewhere between 35-38 inches. Some procedures may be done while sitting, so an adjustable stool, 23-26 inches high, should be provided.

The work station illustrated on the following page has a flexible design, is easily adaptable to a library's needs, and requires little carpentry.

MATERIALS:

2--4' x 8' sheets of 3/4" finish grade plywood
4--2" x 4", cut in lengths of 6', 3', 22-1/2", 22-1/2"

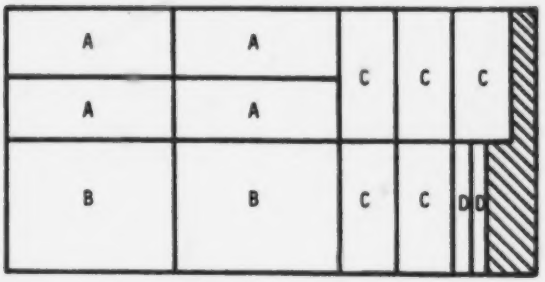
This workstation is built to a height of 35 inches. The height can be adjusted by varying the height of the back panels and uprights from 30 inches (the additional 5 inches is the counter.)

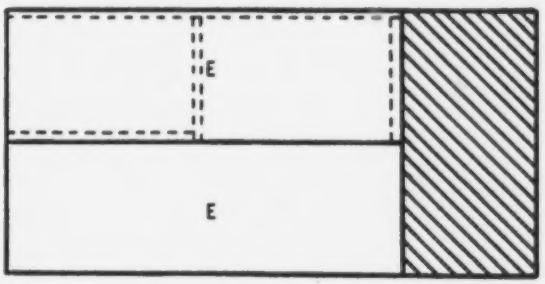
The plywood is cut according to the diagram at right.

The bottom shelf is raised off the floor 3 inches and the area below the shelf is then boxed in with the kick boards.

The dashed line in the drawing denotes the placement of the 2 x 4's between the counter top and bottom, creating a paper storage area.

A--Uprights for shelves, 12" x 30"
B--Back panel for shelves, 24" x 30"
C--Shelves, 11" x 24"
D--Kick boards, 3" x 24"
E--Counter top and bottom, 24" x 72"
==== Placement of 2 x 4's





Some other ways to create a work station:

High-impact plastic milk cartons or decorator cubes (open at one end) can be stacked as supports for a table top.

Two small utility shelves can support a table top. Extra storage room can be made by running boards from shelf to shelf across the back.

Or construct the workbench from sheets of 3/4" plywood. The Small Bindery by Jane Greenfield (New Haven, CT: Yale University Libraries, 1981; Preservation Pamphlet No. 5) contains a sample plan and is available from the Preservation Department.

PAPER CUTTER

Although it is quite possible to cut materials with a sharp knife and a metal ruler, it is slow, tiring and exacting work. A paper cutter is really just a huge pair of scissors, designed to cut one thickness at a time for maximum accuracy. An ordinary table model with a flat gridded base board and a curved, hinged blade is acceptable. Even better would be a floor model with a foot operated clamp. Paper cutters commonly come in sizes from 14-36 inches, the larger sizes being much more useful. A board shear is a larger version of the paper cutter, but more powerful and precise.

The paper cutter should be kept on a separate table near the work station.

ADJUSTABLE-ARM WORK LAMP

Ordinary room lights and window light are seldom strong or concentrated enough for detail work. A work lamp solves this problem. Such lamps often come with an adjustable arm and a variable mount so that they can be attached to either the wall or table top.

ACCESS TO RUNNING WATER

Water is needed to clean hands and tools and to mix glue and paste. It is not absolutely necessary that the water source be in the same room - nearby is good enough. A jar of water is kept on the workbench so that brushes can be soaked and drips mopped up.

METAL-EDGED PRESSING BOARDS

It is desirable to press newly repaired books to keep the glued parts in close contact while they dry. Additionally, this step is helpful in defining the hinge groove after repair.

Brass- or aluminum-edged boards are made by attaching a 3/8" metal strip, centered from top to bottom, along one edge of 1/4" plywood. The 1/16" metal lip formed above and below fits into the hinge area of a book. In this way, several books may be pressed at a time, either in a book press or weighted down with bricks wrapped in Kraft paper.

Another way to press books is to place catalog card drawer rods or metal knitting needles into the grooves formed by the hinges, then put a plain board on top and a weight.

ADDITIONAL OR OPTIONAL EQUIPMENT

BOOK PRESS

A press is an efficient way to secure the book structure while repairs dry. A commercial press can be purchased which will accommodate several volumes at a time, the actual number being determined by the opening, or "daylight". Sometimes a library has a press hidden away. If this is the case, unearth it, clean it up and use it! It will make your life easier. An old-fashioned letter press can be adapted for use as a book press by inserting longer bars into the uprights.

LARGE PIECE OF 1/4" GLASS

Glass is a suitable work surface for polyester film encapsulation of flat documents. The surface is easy to clean, film will cling to it by static electricity, and it can be cut on directly with knives as the surface will not scratch (although knife blades do get dull faster). A 30" X 36" piece is usually big enough.

If a lot of encapsulation is to be done on a continuing basis, the glass can be put on a table of its own and mount the polyester film roll on a dowel rod along one edge.. The film can then be pulled out, measured, cut, and used all in the same place.

CUTTING BOARD

A self-sealing mat does not warp or crack and provides a non-slip cutting surface with measuring lines.

BOXBOARD CRIMPER

The best conservation "treatment" for rare, valuable or fragile materials is to place them in a protective enclosure such as a box or portfolio to provide protection from dust, light, abrasion and atmospheric pollutants. A simple folder with four flaps can be made to exactly fit a specific book, thus allowing no movement within the box. The bends made in the boxboard are called "crimps". Many enclosures are constructed from laminated alkaline paperboard called "boxboard". Boxboard can be laboriously crimped by hand using a bone folder and a home-made crimping jig, but better crimps can be make more quickly by using a crimping machine. These simple machines have a bed which accomodates a sheet of boxboard no larger than 46", and a crimping bar operated by a foot treadle. Sometimes called a "Phase Box Maker".

Four-flap folders can also be constructed without a crimper from archival corrugated board. (see MATERIALS and SUPPLIES) The board is bent against a table edge and along the corrugations and fastened shut with Velcro®.

TOOLS

AWL

A stabbing tool used to pierce holes along the fold of a single-signature pamphlet prior to sewing it into a pamphlet binder. A biology probe or a potter's cut-off needle can be used instead of an awl.

BONE FOLDER

It resembles a smooth letter opener and made from bone or plastic. A bone folder is used to smooth glued surfaces and to crease or fold materials.

Two useful shapes are straight and pointed. The straight is best for working in the hinge area and for smoothing down flat paper and cloth; the pointed is best for scoring, crimping and working in tight spaces.

BRUSHES

Several types of brushes are needed for surface cleaning and for application of water and adhesives.

-Artist's oil or acrylic paint brush

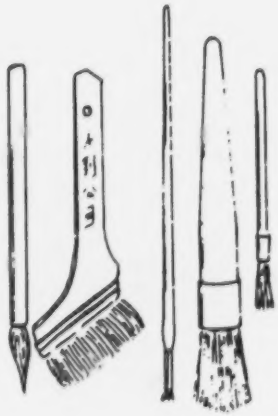
A narrow long-handled brush is used to apply small amounts of glue or paste to hard-to-reach areas, such as in tightening very loose hinges.

-Bookbinder's round glue brush

Designed for the efficient application of adhesives, these brushes have coarse natural brustles mounted into a ferrule. The advantage of using these special brushes is that they hold a lot of adhesive (so the brush does not have to be dipped very often) and they lay a smooth coat.

Any brush used with adhesives must by cleaned well after each session or the glue hardens in the base of the bristles, forming a "heel".

Have at least three sizes on hand: small (1/4"), medium (1/2"), large (1"). Natural bristle housepainting brushes can be used instead of round glue brushes.



-Dusting brush

A very soft brush, such as a draftsman's board brush or a Japanese utility brush, is used to brush away eraser crumbs or loose dirt when cleaning paper. Often, particularly if the paper is fragile, this is the only cleaning that is advisable.

-Oriental watercolor brush

A fine-haired pointed brush used in the preparation of Japanese paper mending strips by the water-tear method. Some conservators use a draftsman's ruling pen filled with water for the same purpose.

-paper cutter	Brodart; DEMCO; Dick Blick; Gaylord; Gane Grothers & Lane; University Products; American Printing Equipment & Supply Co.(for Vagelli BOARD SHEAR: BookMakers; for Jacques BOARD SHEAR: Nixen)
-adjustable-arm work lamp	Dick Blick; art supply stores; office supply stores
-metal-edged pressing boards	Gane Brothers & Lane; Basic Crafts; lumber yard and hardware store
-book press	Basic Crafts; BookMakers; Gaylord; Gane Brothers & Lane, available used
-boxboard crimper	("Phase Box Maker") Hollinger; (crimping jig) Pohlig Bros.
-corner rounder	(machine) Hollinger; Light Impressions; (U-gouge) Aiko's
-rivet setter + rivets	(machine) TRW-Carr Division; (hand-set) Art Handicrafts; fabric stores
-bookbinders's round glue brush	Basic Crafts; BookMakers; Gane Brothers & Lane; TALAS
-dusting brush	art supply stores; Aiko's; Light Impressions
-oriental watercolor brush	art supply stores; Aiko's
-small sharp scissors	Brookstone; fabric stores; surgical suppliers
-scalpel	BookMakers (X-Acto knives: art supply stores, craft stores)
-book repair knife	Brodart; DEMCO; (dull paring knife: discount stores)
-cork-backed metal ruler	Brodart; DEMCO; Gaylord; University Products; art supply stores; office supply stores
-bone folder	(real) BookMakers; Light Impressions; TALAS; Gane Brothers & Lane; Basic Crafts; (plastic) Brodart; DEMCO; Gaylord; University Products
-microspatula	BookMakers; Fisher Scientific
-awl	Art Handicrafts; Gane Brothers & Lane; craft shops; hardware stores
-metal T-square, metal or plastic triangle, and metal L-square	art supply stores; hardware stores; Art Handicrafts
-tiny whisk	gourmet shops; kitchen shops
-polyvinyl acetate adhesive (PVA)	Aabbitt Adhesives; Aiko's; TALAS; (Magic Mend: Gaylord)
-starch paste, methylcellulose	Aiko's; BookMakers; Light Impressions; TALAS, Process Materials
-#415 Scotch Brand double-sided tape	Light Impressions; University Products; Hollinger; TALAS; Conservation Resources
-Archival Aid Document Repair tape (Ademco)	Light Impressions; University Products
-endsheets (these are suitable; other choices are possible)	
-(for Mohawk Superfine Text)	Andrews/Nelson/Whitehead; BookMakers
-(for Archivart Laid Endleaf)	Process Materials Corporation
-(for Alphacellulose Paper and Perma-Dur Ledger)	University Products
-(for Permalife 80 lb.)	TALAS
-boxboard	Conservation Resources; Hollinger; Light Impressions, University Products
-bristol	Hollinger; art supply stores; Process Materials; University Products
-pressboard	Gane Brothers & Lane; University Products
-corrugated board	process Materials; Light Impressions, University Products
-Japanese papers	Aiko's; Light Impressions; Andrews/Nelson/Whitehead; University Products
-polyester film	Hollinger; light Impressions; University Products; Conservation Resources
-envelopes	Conservation Resources; Hollinger; University Products; Light Impressions
-interleaving paper	Conservation Resources; Hollinger; University Products; Light Impressions
-blotting paper	BookMakers; Process Materials Corp.; Light Impressions; University Products; photo supply stores
-bookcloth and buckram	BookMakers; Gane Brothers & Lane; Holliston Mills; Joanna Western Mills; Andrews/Nelson/Whitehead
-super	Gane Brothers & Lane (hinge cloth); fabric stores
-grosgrain ribbon	fabric stores or wholesale supplier
-linen thread and a long, strong needle	Art Handicrafts; Basic Crafts; Gane Brothers & Lane; University Products
-rivets	TRW-Carr Division
-plastic washers	Conservation Resources

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SUPPLIERS

Aabbitt Adhesives
2403 North Oakley
Chicago, IL 60647
(312) 227-2700

Aiko's
714 N. Wabash Avenue
Chicago, IL 60611
(312) 943-0745

American Printing Equipment
And Supply Co.
42-25 Ninth St.
Long Island City, NY 11101
(212) 729-5779

Andrews/Nelson/Whitehead (A/N/W)
31-10 48th Avenue
Long Island City, NY 11101
(212) 937-7100 [$100 minimum]

Art Handicrafts Co.
3512 Flatlands Avenue
Brooklyn, NY 11234
(212) 252-6622

Basic Crafts Co.
1201 Broadway
New York, NY 10001
(212) 679-3516

BookMakers
2025 Eye Street, N.W., Room 412
Washington, D.C. 20006
(202) 296-6613 [$25 minimum]

Boye Needle Company
4343 N. Ravenswood
Chicago, IL 60613
(312) 472-0354

Brodart, Eastern Division
P.O. Box 3037
1609 Memorial Avenue
Williamsport, PA 17705
(800) 233-8467 [no minimum]

Brookstone Company
127 Vose Farm Road
Peterborough, NH 03458
(603) 942-9511 [no minimum]

Conservation Resources
International Inc.
1111 North Royal Street
Alexandria, VA 22314
(703) 549-6610

DEMCO
Box 7488
Madison, WI 53707
(800) 356-8394 [no minimum]

Dick Blick Company
Box 1267
Galesburg, IL 61401
(800) 447-8192 [no minimum]

Fisher Scientific Company
1241 Ambassador Blvd.
St. Louis, MO 63178-4989
(314) 991-2400

Gane Brothers & Lane, Inc.
Mail Order Catalog Division
1400 Greenleaf Avenue
Elk Grove Village, IL 60006
(312) 593-3360 [$10 minimum]

Gaylord Bros., Inc.
Box 4901
Syracuse, NY 13221
(800) 448-6160

The Hollinger Corporation
3810 South Four Mile Run Drive
P.O. Box 6185
Arlington, VA 22206
(703) 671-6600

Holliston Mills Corporation
P.O. Box 478
Kingsport, TN 37662
(800) 251-0251

Joanna Western Mills Company
220 Broad Street
Kingsport, TN 37660
(800) 251-7528 [no minimum]

Light Impressions Corporation
439 Monroe Avenue
P.O. Box 940
Rochester, NY 14603
(800) 828-6216 [no minimum]

Nixen
P.O. Box 261
Mystic, CT 06355
(203) 572-0241

Process Materials Corporation
301 Veterans Boulevard
Rutherford, NJ 07070
(201) 935-2900 [$40 minimum]

TALAS
213 West 35th Street
New York, NY 10001-1996
(212) 736-7744

TRW United Carr Supply
10544 West Lunt Avenue
Rosemont, IL 60018
(312) 296-7161

University Products, Inc.
P.O. Box 101, South Canal Street
Holyoke, MA 01041
(800) 628-1912

CUTTING TOOLS

-Scalpel or craft knife and blades

In many situations a sharp knife is more accurate and quicker to use than scissors. The blades are easy to change and may be re-sharpened on a piece of fine sandpaper. Craft knives such as X-Acto® are acceptable, but scalpels are sharper and easier to use. Straight blades are best for cutting and curved blades are used for paring and shaving off layers of paper.

-Dull paring knife or "book repair" knife

Used to scrape away loose paper layers (e.g. the old spine lining paper prior to preparing the text block for recasing).

-Embroidery scissors

Small sharp scissors (with approximately 1½" blades) used for making snips in cloth.

-Scissors and shears

The new lightweight type (such as Fiskars®) are particularly comfortable and precise. A suitable selection would be 7" to 9" scissors and large shears with bent blades (for quick work on large areas).

LIGHT WEIGHTS

Used to assure close contact between freshly glued or pasted surfaces. Also, to hold dry parts in place while they are being measured and assembled.

Some possibilities are: small beanbags filled with lead shot (line the inside of the bag with plastic to prevent lead dust from filtering through the cloth), baby-food jars filled with beans or pennies, and cubes of solid lead or pieces of thick cardboard glued together and covered (with paper).

-Small pieces of 1/4" glass with sanded edges

Another variant on light weights. Convenient, non-abrasive, easy to clean and transparent so that you can see what you are doing. Also, a good surface on which to "glue up" small things such as mending strips.

MICROSPATULA

A tool used by conservators to pry up layers of paper and cloth and to apply minute amounts of adhesive to otherwise inaccessible areas.

MEASURING TOOLS

Not all rulers are created equal. Some have thick or blurry calibrations which make it difficult to see where to make a mark. It only takes one or two tiny inaccuracies to throw all the measurements off by a significant amount. Make sure that all the rulers you buy have neat, precise calibrations.

-stainless steel ruler with cork backing

A cork-backed ruler greatly minimizes the chance of a ruler slipping while being cut or drawn against - saving both time and materials. The metal prevents a knife from cutting the ruler. It is best to have these in several lengths, such as 6", 12", 18" and 24".

-Yardstick

To measure bookcloth and to draw long lines.

METAL KNITTING NEEDLES

The perfect tool for applying glue into a loose hinge area on a case bound book. The needle is coated with thinned PVA (polyvinyl acetate adhesive) and inserted into the space created by the failure of the original adhesive (see CONSERVATION CORRESPONDENCE, number 2).

SANDPAPER with BLOCK or HOLDER

Fine sandpaper is used to level bumpy binder's board surfaces (e.g. the inside of a book cover boards after old endsheets have been removed, preparatory to replacing them). As when working with wood, it is more efficient to use sandpaper in a rigid holder.

SQUEEGEE

Used in polyester film encapsulation to force air out from between the layers of paper and film prior to final sealing of the package. It is best to have the rubber blade longer than 6 inches.

STAPLE REMOVER

To remove metal staples from pamphlets. A staple remover should never be used, however, when the paper is thin or fragile.

METAL T-SQUARE, METAL or PLASTIC TRIANGLE and METAL L-SQUARE

Books are (usually) rectangular. These tools are all aids in keeping things at right angles (90°).

TINY WHISK

Used to beat paste adhesives to make them smooth. A fork can be used.

MATERIALS AND SUPPLIES

ADHESIVES

Selection of an appropriate adhesive for each procedures and type of materials is crucial. Adhesives used in conservation should have a pH of 6-7 and be permanent (the color, chemical composition, flexibility and texture should not change with age). They should be unpalatable to insects and mold. Impermanent adhesives such as hide glue and rubber cement will deteriorate and are not used in conservation.

-Polyvinyl acetate adhesive (PVA)

A white, internally plasticized copolymer synthetic resin glue which dries clear or water-white. Easily diluted with water, strong and fast-drying. The preferred glue for situations where strength and flexibility are required. PVA is not easily reversible, however. It has a shelf life of about one year in a stable, cool environment and should never be allowed to freeze.

-Methylcellulose

A chemically inert substance which mixed with water forms a paste. May be used for mending paper or in 50/50 mixture with PVA for other applications. Dries more slowly than starch paste, but has a longer shelf life after it has been prepared. It is easily reversible in water.

-Starch paste

Starch is a polymer of glucose. Wheat and rice starch are compounded with water (like flour gravy) to form a paste adhesive. Some starch adhesives for bookbinding and conservation need to be "cooked" before use, while others are "instant". The dry powder has a long shelf life if kept cool and dry, but after mixing spoils quickly. Paste can be kept in a refrigerator to prolong its life. Like methylcellulose, starch paste can be used in mixture with PVA and is easily reversible in water.

-#415 Scotch Brand® double-sided tape

The ONLY tape which is recommended for use in sealing the edges of polyester film in the encapsulation procedures or joining the parts in some types of protective enclosures. The tape must never touch the document. Tested by the Library of Congress, this tape was proven to be chemically stable; it did not change color under accelerated aging conditions and the adhesive did not ooze from its original position.

-Archival Aid® Document Repair Tape (Ademco)

A very thin, acid-neutral pressure sensitive tape. It has a "slow-tack" adhesive which does not really grab the surface for a day or so. Not recommended for archival repairs, but convenient for ephemeral materials.

-#45 Velcro® Adhesive

A strong adhesive used exclusively to attach Velcro® fasteners without sewing. Sticky-Back Velcro© will not adhere permanently.

CLOTHS, RIBBONS and FASTENERS

-Bookcloth and buckram

Cloths used to cover books, portfolios and boxes. These are natural cotton which has been dyed, impregnated with starch (starch-filled) and processed with heat and pressure. "Bookcloth" is like muslin and "buckram" is like canvas. Library binders use pyroxylin- or acrylic-coated buckram which most people find to be both harder to work by hand and less aesthetically pleasing than starch-filled cloth.

-Super (also called crash or mull)

A thin, tightly woven, starch-filled bleached cotton cloth used in lining spines when "casing in" books or for some hinging techniques.

-Grosgrain ribbon

Cotton/polyester blend grosgrain ribbon (1/4" wide) can be used to tie up a book that has detached cover boards or a loose spine. Ribbon 1/8" wide can be used to reinforce headcaps during spine repair.

-Linen thread and a long, strong needle

Pamphlets may be sewn into binders instead of stapled. Also, linen thread in used to reattach loose signatures (see ONE LB. COFFEE CAN).

-Rivets, plastic washers, and waxed linen thread

The combination of metal rivets ("male" and "female" parts hammered together), plastic washers 1" in diameter, and waxed linen thread is used to hold protective enclosures closed.

-Velcro® fasteners

"Hook and loop" fasteners used to secure protective enclosures. Attached with #45 Velcro® adhesive. (see ADHESIVES)

CLEANERS

-Erasers

Erasers should be low-abrasion and should not deposit color on surfaces. Vinyl Magic Rub® erasers come in both blocks and peel-off pencils. Pink Pearl® and Art Gum® are also acceptable, but slightly more abrasive. For dry cleaning large dirty areas, Absorene® wall paper cleaner, Opaline® pounce bags, and One Wipe treated dust cloths can be used.

-One Wipe® treated dust cloths

Library of Congress has tested these cloths and found them safe. They may be washed repeatedly and still retain their effectiveness. Used for dry cleaning books and flat paper, and to keep polyester film free of debris during encapsulation.

PAPERS, BOARD, and FILM

For conservation purposes papers and boards should be acid-free or acid-neutral. Many also contain an alkaline buffer to enable them to resist acid attack from the environment. There is a popular misconception that 100% rag means acid-free - this is not true. Board is measured in thousandths of an inch (e.g. .052" thick), or plys (e.g. 2 ply, 4 ply) which refer to the number of thin layers glued together. Paper is often sold by weight per 1000 sheets (e.g. 60 lb., 80 lb.).

-Blotting paper

Thick, white unsized paper used to absorb moisture so that wet paper dries without cockling.

-Corrugated board

Constructed like ordinary corrugated board, available in either single- or double-wall, this light colored board can be bent against the edge of a table along the corrugations to make very simple protective enclosures. Not as durable as boxboard.

-Endsheet papers

Paper for endsheets is purchased in large sheets and then folded and cut to convenient sizes. The approximately sized endsheets are then trimmed to fit each individual book. 70-80 lb. paper is a suitable weight. Available in shades of white/cream/buff to match the color of various text blocks.

-Envelopes

Envelopes buffered to an alkaline pH are used for pamphlets and paper documents, whereas neutral pH (unbuffered) high alpha cellulose envelopes are more suitable for the storage of photographs. Many styles and sizes are available. The seamless style, or seams to the side, are preferable.

-Interleaving paper

A thin paper which is inserted between pages or documents to prevent acid migration and to protect from abrasion.

-Boxboard

An alkaline board (.040 - .060) used to construct protective enclosures, usually with the aid of a crimper. Usually gray/white or tan colored, and in differing qualities, sizes, and prices.

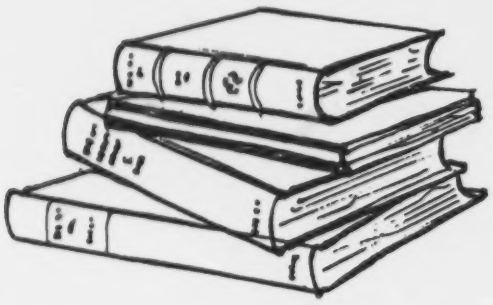
BOOKS

THEIR CARE AND REPAIR

JANE GREENFIELD

ADVISOR IN RARE BOOK CONSERVATION,
YALE UNIVERSITY LIBRARY

LECTURER IN BOOKBINDING,
YALE SCHOOL OF ART AND ARCHITECTURE



THE H. W. WILSON COMPANY
NEW YORK
1983

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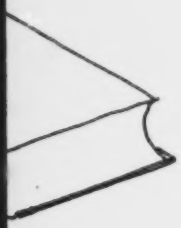
TIP-INS AND POCKETS

These instructions are intended for research materials only -- not for rare books.

"Tipping" is the attachment of one leaf to another by means of a narrow strip of adhesive along one edge. In the context of this chapter, "tip-ins" are materials that need to be added to books already bound -- such as errata slips, indexes, replacements of misprinted pages provided by the publisher, or replacements, usually photocopies, for pages lost, torn, or cut out.



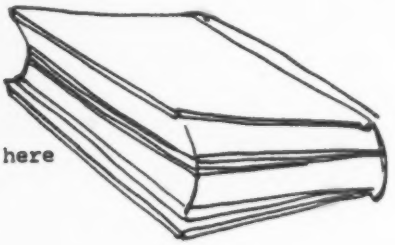
These materials are most frequently in one of four formats each of which requires a different treatment:

a single leaf
several single leaves
a folded sheet
several folded sheets, one inside another

Pockets are usually adhered to the back board of a book to hold materials that belong with it, but should not be adhered to it, such as large folding maps or groups of loose plates.

It isn't possible to specify the maximum number of leaves (since paper varies so much in thickness) to be tipped in or the maximum thickness of material to be put in a pocket.

Remember that when a book is shelved,



compression here

puts strain here and damages the binding.

You will have to use your own judgment on this point.

If a very large number of leaves are missing from a book, replacement or reproduction is probably the answer.

If very thick material requires a pocket, it can be put in a protective cover with a suitable call number and shelved beside the book itself.

EQUIPMENT

The equipment and materials suggested in these lists are for books under 14" high. Sizes must naturally be increased for larger books.

Cutter or board shears
3 or 4 wooden pressing boards, 9" x 14"
3 or 4 large weights
2 small weights
2 brushes
  2" house painting brush
  1" oil painting brush
Triangle
Straight edge
Bone folder
Scissors
Utility knife or scalpel
Needle, No. 6 crewel
Adhesive container

MATERIALS

The amounts given in parentheses are adequate for about 100 tip-ins or pockets.

Tip-ins:

Waste cardboard (5 or 6 pieces)
Newsprint (1 pad, 18" x 24")
Japanese tissue (2 sheets)
Waxed paper (1 roll)
Linen thread, Barbour's 3 cord, No. 30 (one 50 gram spool)
Beeswax (1 small container)
Adhesive, 50/50 (1 cup)

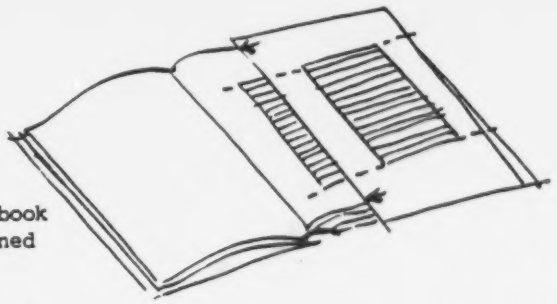
Pockets:

Paper, preferably acid-free (25 sheets or an 18" x 24" pad of thin drawing paper)
Bristol board, .010 (25 sheets or an 18" x 24" pad)
Double-faced tape (3 rolls)

MEASURING

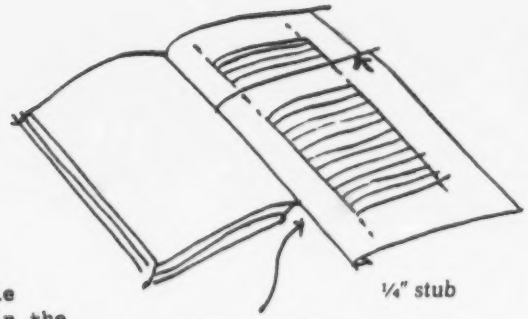
Material to be tipped in usually needs to be trimmed.

Use the tip-in itself in marking for trimming.



Put the tip-in on the book with the text areas lined up.

Mark the head and tail of the page at the arrows and cut off the excess.



Do the same with the fore-edge, if possible allowing 1/4" extra in the gutter margin for what will be a stub.

To be sure that the tip-in will not extend beyond the rest of the book, you may want to trim it about 1/16" in from your marks.

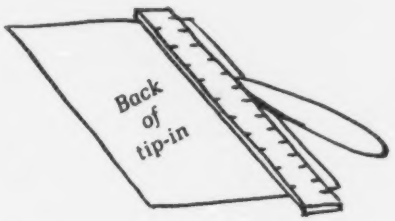
After trimming, put the tip-in in position in the book (without adhesive) to check your measurements and to make doubly sure that it will not extend beyond the other pages.

TIPPING IN A SINGLE LEAF

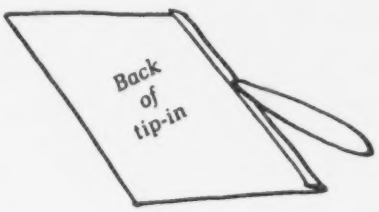
If the gutter margin of material to be tipped in is less than 3/8", photocopy it with a wider gutter margin.

Trim the tip-in to the size of the book (or slightly less) at head tail and fore-edge.

Place a straight edge 1/4" in from the gutter edge of the tip-in and score along it with the point of a bone folder.



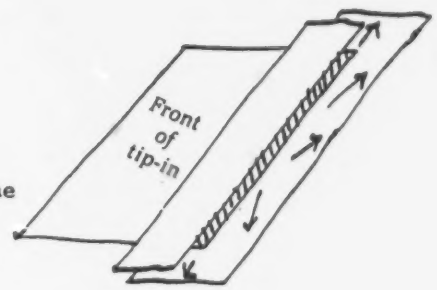
Fold the 1/4" around to the back and rub down the fold with a bone folder. This folded edge is called a stub.



Tipping in

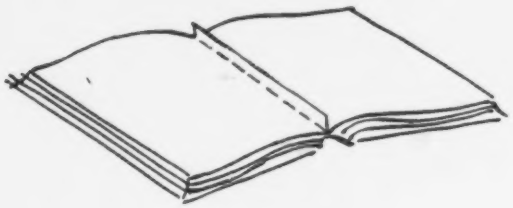
Put the tip-in, with the stub out flat, on a waste pasting strip.
Put another pasting strip on top of it with its edge lined up with the inner edge of the stub.

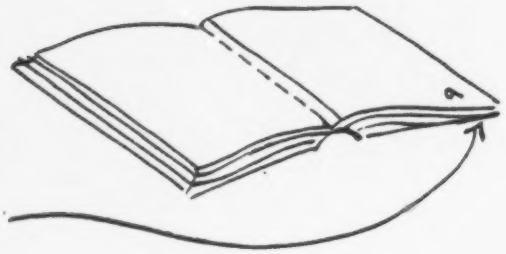
Paste the shaded area in the direction of the arrows.



Throw away the pasting strips before proceeding.

Position the tip-in as far into the fold of the book as possible.

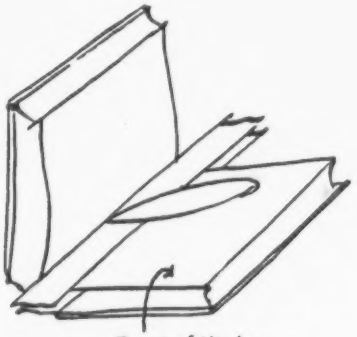




Rub your finger along the stub to adhere it to the adjacent page (in this case page 9).

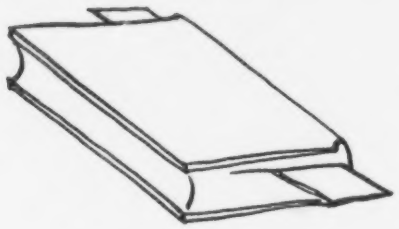
Put a strip of waxed paper in the fold to prevent any excess adhesive from sticking the stub and the tip-in itself together.

Put another strip of waxed paper on the front of the tip-in. Hold the book open so that the pasted area is supported and rub gently along it with a bone folder.



Front of tip-in

Close the book and let it dry for at least five hours before removing the waxed paper strips. Overnight drying is best.



If the tip-in extends beyond the other pages, in spite of all your care, it should be trimmed flush with them when the tipped edge has dried.

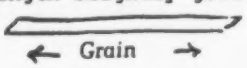
Put a piece of waste board under the tip-in and cut off the excess using a scalpel and straight edge.

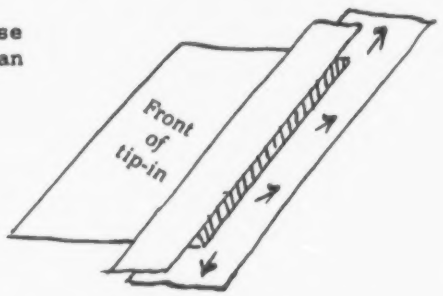
ADDED STUB

If the gutter margin of a book is so narrow that a 1/4" edge folded back to form a stub would obscure text, a transparent stub of Japanese tissue may be added instead.

To add a stub:

Cut a 1/2" strip of transparent Japanese tissue to a length slightly greater than tip-in.



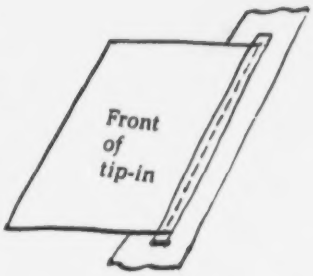


Put the tip-in, front side up, on a waste strip and put another waste strip on top of it, leaving 1/4" of the gutter edge exposed.

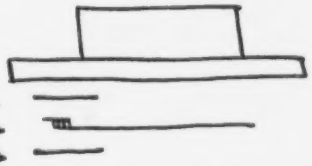
Paste in the direction of the arrows. Throw away the waste sheets.

Put the tip-in on a sheet of waxed paper and position the strip of Japanese tissue, lining up its edge with the edge of the pasted area.

Put another strip of waxed paper on top of it and rub down with the flat edge of a bone folder.



Leave this sandwich:



under a wooden board and a weight until it is dry. Pressure helps the paper dry flat.

Trim the Japanese tissue strip flush at head and tail with scissors.

A tip-in with an added stub is tipped into the book in the same way as is a single leaf.

TIPPING IN SEVERAL SINGLE LEAVES

If the gutter margins of the material to be tipped in are very narrow, they can be photocopied with wider ones.

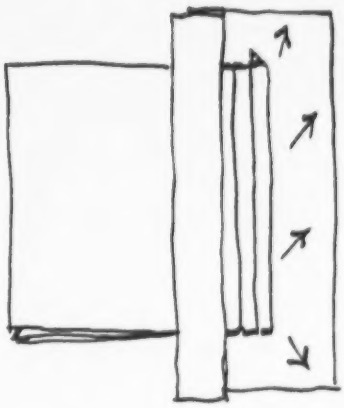
Photocopied material can be difficult to trim as the margins may be of different widths. In that case it is necessary to determine the exact size of the tip-in and then trim each leaf individually, lining up margins as best you can.

Trim the last leaf 1/4" wider than the others if possible, so that it can be folded back to form a stub.

To join 4 leaves (8 pages):

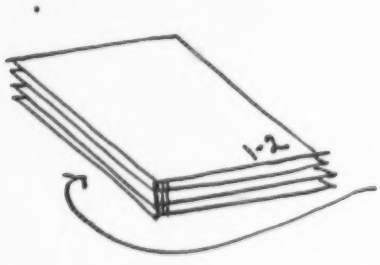
Place all the leaves except the first one (pp. 1-2), which needs no adhesive, on a waste sheet with 1/8" of the gutter edge of each exposed. Put a waste strip 1/8" in from the edge of the first leaf, (pp. 3-4).

Paste all the exposed areas at the same time, pasting in the direction of the arrows.



Separate the leaves, which will stick together slightly at the very edge.

Pick up each leaf and line up its edge with the preceding one, adding the unpasted leaf (pp. 1-2) on top.



Rub down the adhered edges with a bone folder.

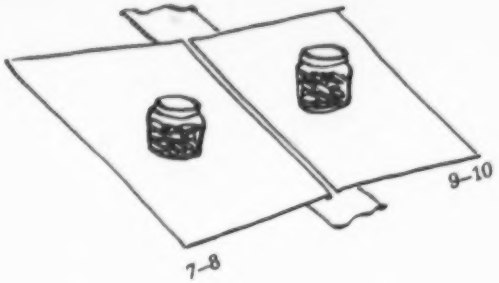
The adhered leaves may now be treated as a single leaf and tipped into the book in the same way, with or without an added Japanese tissue stub, depending on the width of the gutter margin.

TIPPING IN MULTIPLE LEAVES

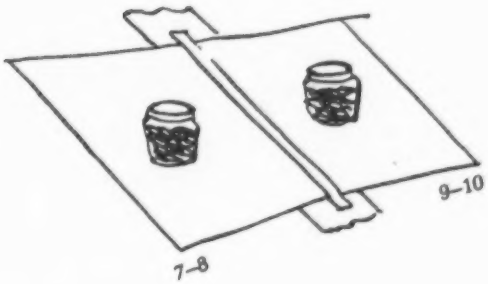
This method is useful if a large number of single leaves need to be tipped in, and is a better, if more time-consuming, way of attaching them to each other. It is called "guarding."

To attach 8 leaves (16 pages) together, cut 4 strips of Japanese tissue 1/2" wide and slightly longer than the leaves.

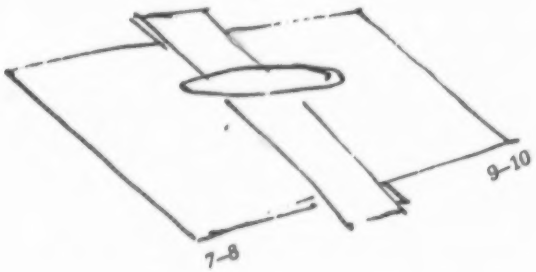
Position the 2 inner leaves (pp. 7-8 and 9-10) side by side on a strip of waxed paper. Put a small weight in the center of each.

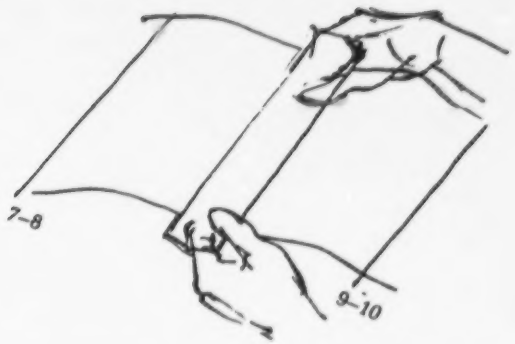


On a waste strip, paste a Japanese tissue guard, as usual leaving about 1/2" at one end unpasted so that the guard will be easy to pick up. Put it, paste side down, along the center of the 2 leaves.



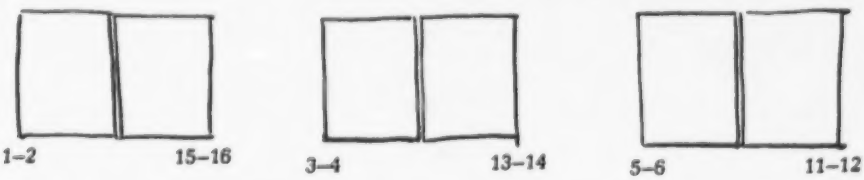
Put another strip of waxed paper over the guard and rub it down with the flat of a bone folder.





Pick up the attached leaves with the waxed paper still in place on each side, and put them aside to dry under a wooden board and a weight.

Repeat the process with the rest of the corresponding pages.

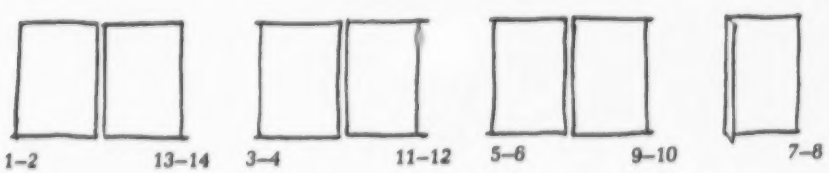


Pile them on top of each other with a strip of waxed paper between each pair and let them dry under the board and the weight for at least 3 hours.

They can then be folded and sewn together.

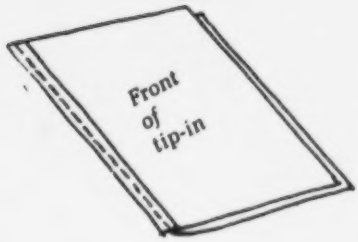
To attach an uneven number of leaves -- 7, for example -- together, the central leaf, pp. 7-8, should be folded at the gutter edge to form a stub extending about 1/4". If necessary, a stub of Japanese tissue can be added.

Cut 3 strips of Japanese tissue and guard the pages together as follows:



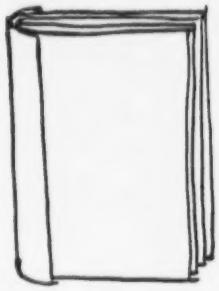
In sewing through the folds, the stub of pp. 7-8 is treated as if it were a full leaf.

TIPPING IN A SINGLE FOLDED SHEET



A single folded sheet can have 1/8" pasted along the gutter margin or a stub added and can be tipped in as already described on pp. 94-97.

TIPPING IN SEVERAL FOLDED SHEETS



These sheets, often stapled together when they are received, can be sewn together through their folds rather than adhered.

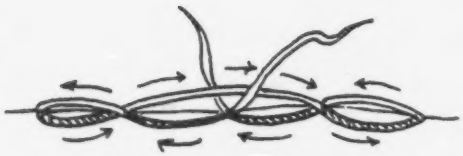
Remove the staples.

Cut a strip of Japanese tissue about 3/4" wide and the height of the tip-in. Fold it in half around the outside of the folded sheets.

A thread about 2-1/2 times the height of the tip-in is needed.

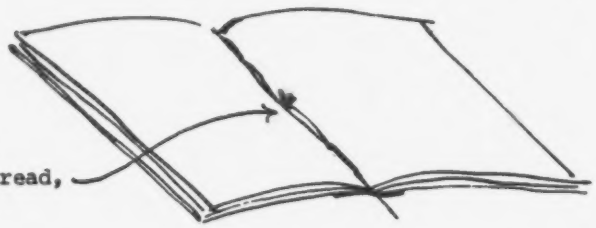
Start sewing inside the fold, leaving a tail of thread long enough to tie in a knot.

Sew in the direction of the arrows, ending in the middle, where you started.

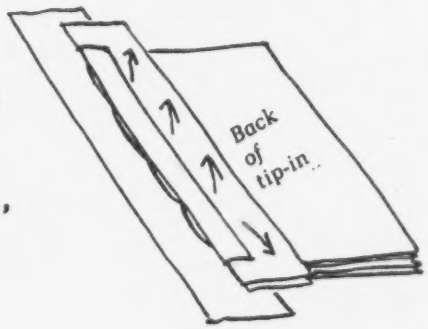


Outside fold

Tie a square knot (left over right, right over left) around the long center stitch.



Trim the ends of the thread, leaving about 1/4".



Put the tip-in on a waste strip with a piece of waxed paper and a waste strip underneath the sewn guard.

Paste in the direction of the arrows, avoiding the threads (which tend to collect excess adhesive) as much as possible.

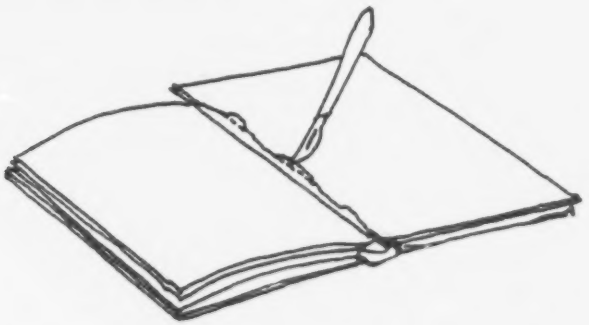
Remove the waste strip but leave the waxed paper in place.

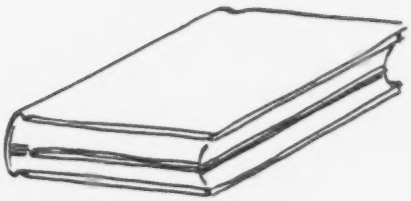
Tip in as already described.

PAGES TORN OR CUT OUT

Torn edges can be trimmed somewhat by putting a thin piece of board -- such as shirt cardboard -- underneath them and cutting away the parts that protrude farthest.

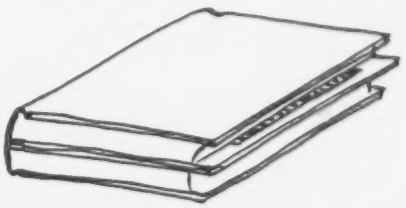
Do not try to cut out the remaining stubs as they are holding their conjugate leaves in the binding.





It is almost always necessary to add a transparent stub to the tip-in, as it can only butt up to the torn or cut edge and so must be adhered over the text.

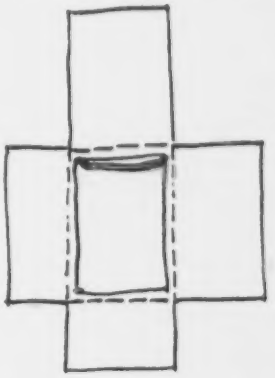
If margins are so narrow that text will extend beyond the book at the fore-edge, the material to be tipped in can be photocopied, reduced by 1/3.



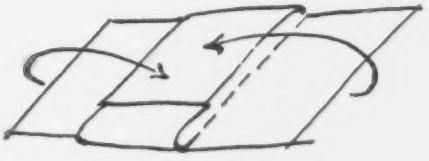
POCKETS

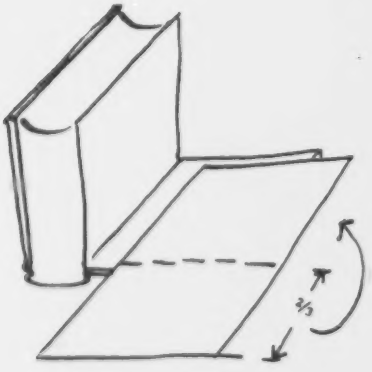
A pocket, to be placed inside the back cover, can be made for material that belongs with a book but should not be attached to it -- a folding map, for example.

Materials more than 1/4" thick should never be added to a bound book as this will strain the binding.



If the material to go in the pocket is fragile, it can be wrapped in a piece of paper, preferably acid-free paper such as "Permalife."

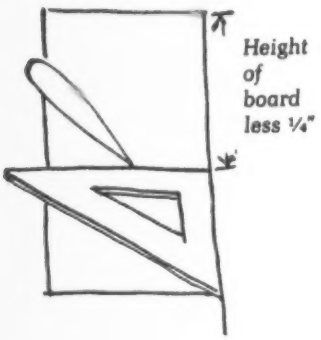




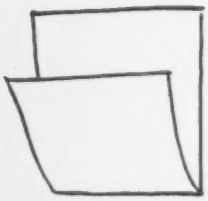
Cut a rectangle of Bristol board, grain long, so that its width is equal to the width of the book's cover board plus 2" and its height is 1-2/3 the height of the book's cover board.

These measurements need not be precise, so measure by eye.

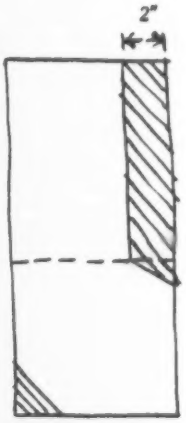
Score the Bristol with a bone folder at a right angle to the edge.



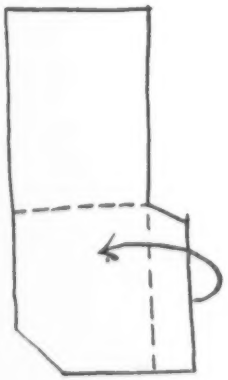
Fold the Bristol.



Cut away the shaded areas with a scalpel and straight edge.



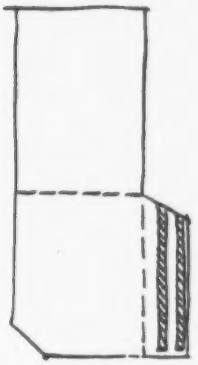
Score and fold the small flap.



TIP-INS AND POCKETS

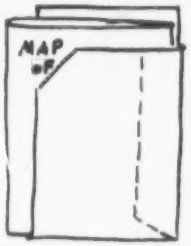
105

Cut 2 strips of double-faced tape down on the small flap.



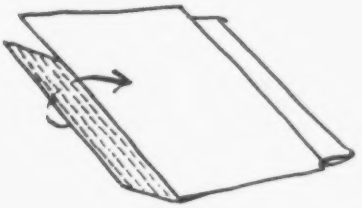
Put the material on the Bristol and fold the lower flap up and the small flap around to the back.

Leave the material in place.

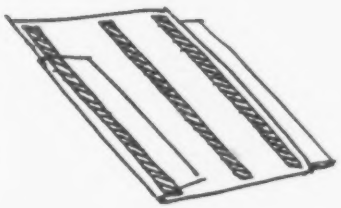


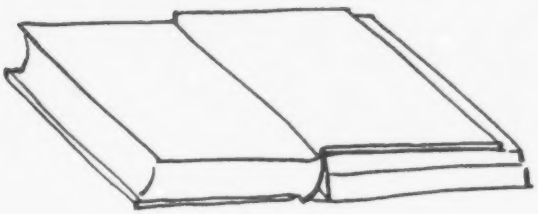
Turn the pocket over and remove the brown paper from the tape.

Press the small flap down.



Put 3 strips of double-faced tape, short of the edges, on the back of the pocket.

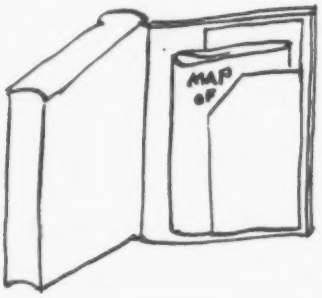




Support the board.
(Other books may be used.)

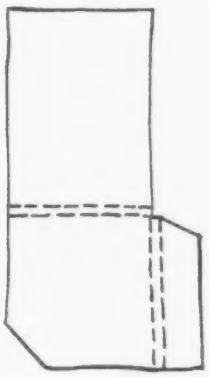
Remove the brown paper and position the pocket about 1/8" in from the fore-edge and tail.

Press down firmly.



* *

If the material is thick, make two folds far enough apart to accommodate the thickness, instead of the single folds just described.



LIBRARY MATERIALS PRESERVATION MANUAL

Practical Methods
for Preserving Books, Pamphlets
and Other Printed Materials

■

HEDI KYLE

WITH CONTRIBUTIONS BY

Nelly Balloffet
Judith Reed
Virginia Wisniewski-Klett

■

ILLUSTRATED BY
HEDI KYLE

NICHOLAS T. SMITH
Publisher
Bronxville, New York

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8 | PRESERVATION ENCLOSURES

Wrappers, folders, slipcases, and boxes—referred to as enclosures—can be either a temporary or a permanent means of protecting books and other materials from light, dust, and excessive or rough handling. Enclosures are safe, economical, relatively simple and fast to make; they lend support to fragile materials; and they keep components securely in one place.

To achieve their protective purpose, enclosures must be made of durable, archival-quality materials. Although enclosures restrict access, a label pasted to the outside of an enclosure can facilitate identification of the item inside and its condition.

Today there are a vast number of books (not necessarily rare) in need of preservation treatment. Currently the number of skilled workers available to work with deteriorating library materials is limited. Enclosures are economical, simple, and sensible and as such are the best option. Many books can be put into enclosures for the price of having one book restored. What is more, many conservators and librarians believe that, as a means of retarding deterioration, without physically altering the material, a lasting enclosure is preferable.

This chapter describes the preparation of a variety of enclosures. A prerequisite for making these enclosures is a good paper cutter. Without one, the procedures can be laborious and inefficient. Institutions that have no facilities for producing large quantities of enclosures for books which require individual and immediate attention, should consider *wrappers* and *phase-boxes* purchased from commercial suppliers. These may prove more economical especially if they can be purchased in large quantity.

STORAGE WRAPPER

Materials that are put into storage for an indefinite time should be wrapped to protect them. It is a good idea to establish a storage system that makes each item readily accessible and provides for reuse of the wrapper enclosing it. The storage wrapper is also useful in the preparation for shipment of valuable or fragile items. Additional protection is provided by enclosing the wrapper in plastic bubble wrap. For shipped items that are to be returned, a note should be included, requesting that the items be rewrapped in the same materials.

Materials:

1. Plastic bubble wrap (only for shipping)
2. Acid-free tissue paper
3. Acid-free wrapping paper

Tools:

1. Bone folder
2. Paper cutter
3. Scissors

1. Wrap the book in two sheets of acid-free tissue paper and turn the package over to keep the wrapping secure. Adhesive tape is *not* needed and not recommended (Figure 145 and 146).

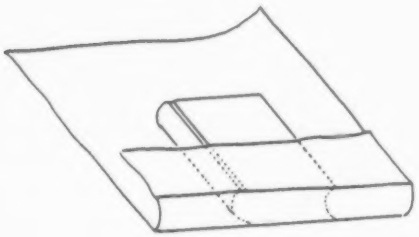


FIGURE 145.

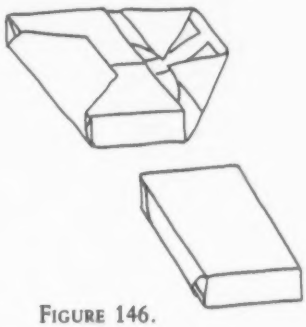


FIGURE 146.

2. Cut a piece of acid-free wrapping paper to twice the height of the book and two and a half times its width *plus* two thicknesses. This outer wrapper will keep the package secure, provide some cushioning, and act as a surface on which to write the title, call number, and other information.

   Note: The dimensions of the wrapping paper do not have to be exact. It is not necessary to tailor each piece of paper to each individual book, especially when many books are being wrapped. To do the job efficiently and quickly, organize books or other items roughly by size and pre-cut the wrapping paper to approximate sizes.

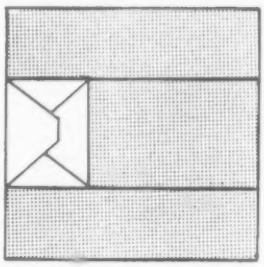


FIGURE 147.

3. Center the tissue wrapped book on the piece of wrapping paper, flush with one edge (Figure 147).

4. Place one hand firmly on the book. With your other hand fold up the paper at head and tail and crease it against the edges of the book.

5. Remove the book and sharpen the creases, using a bone folder, across the entire piece of wrapping paper (see Figure 148).

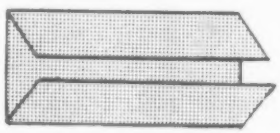


FIGURE 148.

6. Place the wrapped book on the *folded* piece of wrapping paper.

7. First bring the lefthand extending portion of the paper over, align it with the fore-edge, hold it firmly in place and crease it around the spine. Then bring the righthand extending portion over and crease around the fore-edge (see Figure 149).

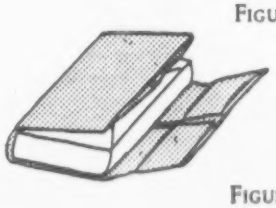


FIGURE 149.

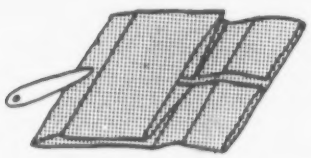


FIGURE 150.

8. Remove the book and sharpen the creases with a bone folder (see Figure 150).

9. Place the wrapped book back on the folded paper. Fold both corners of the righthand flaps at an angle (Figure 151).

10. Tuck the flap with the folded corners *into* the lefthand flap (see Figure 152).

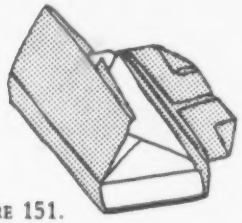


FIGURE 151.

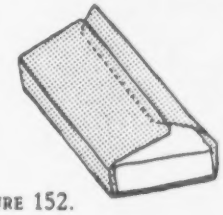


FIGURE 152.

SELF-CLOSING WRAPPER

Originally designed as a temporary holding device, wrappers have proved effective and durable. Next to the *storage wrapper*, the *self-closing wrapper* is the most economical enclosure to make. Self-closing wrappers can be used for materials designated for rebinding or restoring at a later date; or can serve as permanent containers for books that do not qualify for costly treatment. The self-closing wrapper provides easy access to the item inside. For materials less than an inch thick, an enclosure such as the *two-part folder* (pp. 99–105) would be more suitable.

Materials:

1. Map folder stock .010 for average books, 20 pt. caliper library board for larger, heavy books
2. Adhesive (PVA)
3. Double-sided tape (optional)

Tools:

1. Paper cutter
2. Scissors
3. Bone folder
4. Paste brush
5. Paste container
6. Weights (wrapped bricks)
7. Waste paper
8. Sponge or damp cotton cloth for wiping hands

The self-closing wrapper is made from two separate pieces of map folder stock (one vertical piece and one horizontal piece). For neat folds the grain direction of both pieces must run parallel to the fold.

1. Measure and cut a vertical piece of map folder stock that is equal to the width (W) of the book by two and a half times the height of the book (2½ × H) *plus* twice its thickness (2T). [W × (2½ H + 2T)] (see Figure 153).

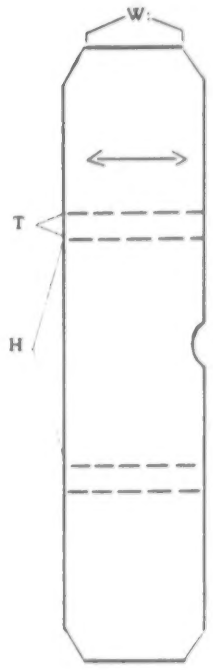


FIGURE 153.

2. Cut a shallow, rounded thumb notch with scissors as illustrated; angle the corners. Place the book in the center of the vertical piece. Fold the extending portions around and crease against the top and bottom edges of the book (see Figure 154).

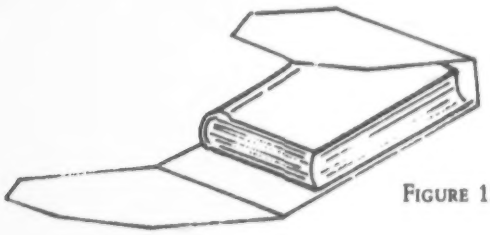


FIGURE 154.

3. Lay the book aside and sharpen the creases with a bone folder.

4. Fold the vertical piece of map folder stock around the book again.

5. Measure and cut a horizontal piece of map folder stock that is the height (H) of the book *wrapped in the vertical piece* by twice the width (2W) *plus* 3 times the thickness (3T) *plus* two inches. [H × (2W + 3T + 2")] (see Figure 155).

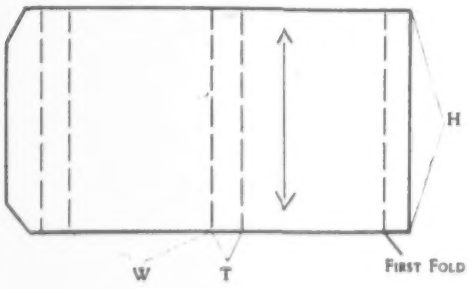


FIGURE 155.

6. Make the *first fold* a little less than one thickness (T) from the right side edge and stand it straight up.

7. Push the wrapped book against the first fold and proceed to fold and crease the horizontal piece around the book. (see Figure 156).

8. Unwrap the book and lay it aside. Sharpen the folds on the horizontal piece of map folder stock and angle the corners of the tuck-in flap.

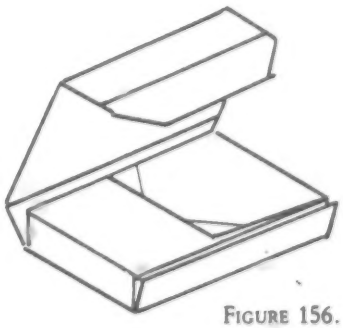


FIGURE 156.

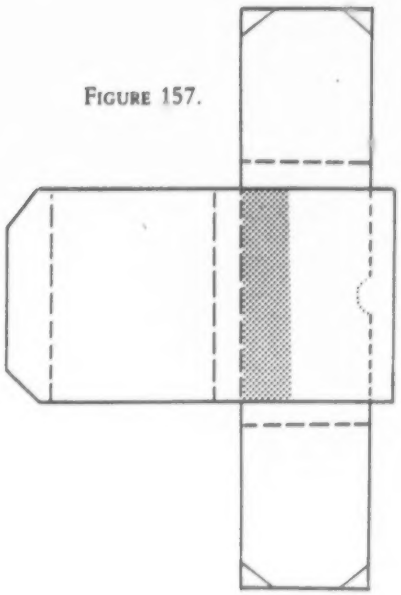


FIGURE 157.

9. Apply adhesive to approximately a third of the middle section of the vertical piece opposite the thumb notch (see Figure 157).

10. Paste the horizontal piece to the vertical piece, as shown (see Figure 157). A strip of double-sided tape can be used instead of adhesive.

11. Wrap the book, folding the flaps in sequence as numbered (see Figure 158A).

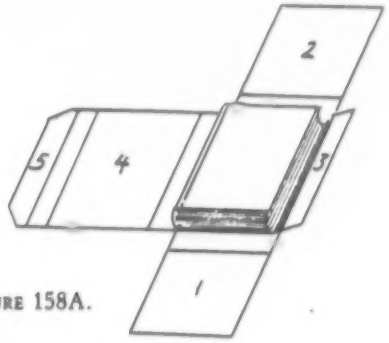


FIGURE 158A.

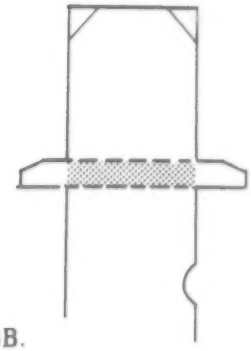


FIGURE 158B.

Note: To make a wrapper for a very rounded spine, cut a strip of map folder stock to fit between the folds of the vertical piece and let it extend two inches on either side. Affix it in place with adhesive or a strip of double-sided tape (see Figure 158b). Angle the corners, fold the tabs down on the spine and fore-edge of book, then close the flaps.

TWO-PART FOLDER

The two-part folder may be used for thin pamphlets and archival papers (fit into ready-made acid-free envelopes) not more than a quarter of an inch thick.

The envelope should have a top flap to shield against dust and light and should be slit open along one side to permit easy access. If pamphlets or other materials do not fit into the envelope, the two-part folder can be adapted to hold a wrapper.

Boards for the folder may be pre-cut, and the scraps can be cut to the width of the spine and used as spacers, which keep the two cover boards the required distance apart. A three-quarter inch spacer can be used for all two-part folders that hold envelopes.

For two-part folders adapted to contain wrappers, the spacers should be as wide as the thickness of the enclosed item *plus* an extra quarter of an inch, which will allow the folder to fit around the wrapper and close without gaping.

Materials:

1. Acid-free envelopes of various sizes
2. Pressboard
3. Book cloth (Recasing Leather) three or four inches wide
4. Adhesive: 50% PVA and 50% Methyl cellulose
5. Double-sided tape (optional)

Tools:

1. Paper cutter
2. Metal ruler
3. Scissors
4. Bone folder
5. Paste brush
6. Paste container
7. Weights (wrapped bricks)
8. Waste paper
9. Sponge or damp cotton cloth for wiping hands

Two-Part Folder Containing an Envelope

Instructions for a two-part folder that will contain an envelope.

1. Choose an acid-free envelope the appropriate size to fit the item. With the open flap nearest to you, slit the long side to your right with a knife (see Figure 159).

2. Turn the envelope around. Insert the item (see Figure 160). Close the flap.

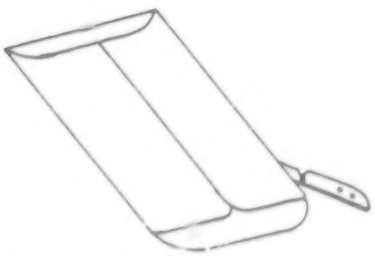


FIGURE 159.

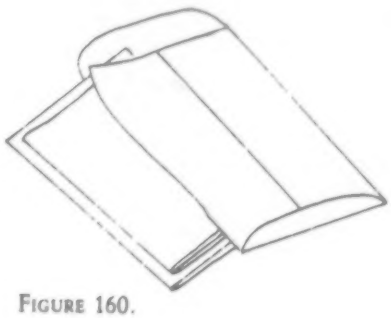


FIGURE 160.

Note: Fragile items should be enclosed in a folded piece of acid-free paper to avoid unnecessary handling or rubbing when removing the items or replacing them in the envelope.

3a. Cut two pieces of pressboard the width of the envelope and slightly larger than its height.

b. Cut a three-quarter inch wide spacer as high as the boards (see Figure 161).

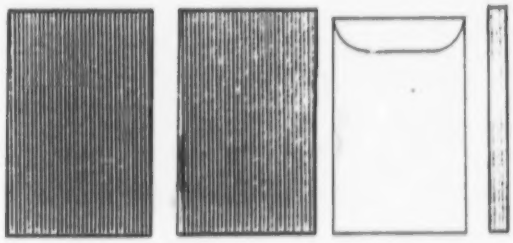


FIGURE 161.

4. Cut a three inch wide strip of book cloth twice as long as the height of the boards *plus* one-half inch (see Figure 162).

FIGURE 162.

5. Apply two dabs of adhesive to the spacer (see Figure 163).

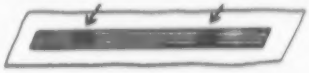


FIGURE 163.

6. Center the spacer on the underside of the cloth strip. About an inch of book cloth should extend beyond three edges of the spacer (see Figure 164). With a little practice this step can be done without exact measurement.

FIGURE 164.

7. Apply adhesive to the book cloth strip as shown in Figure 165.

FIGURE 165.

8. Align one edge of each board up against a side of the spacer, and affix them on the adhesive-coated book cloth (see Figure 166).

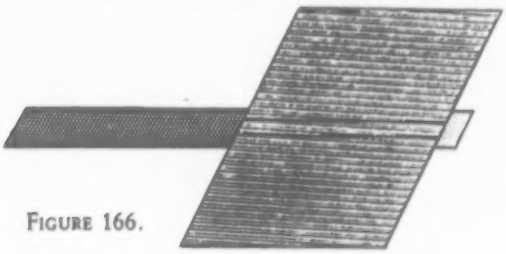


FIGURE 166.

9. Remove the spacer and turn the one inch wide end of the book cloth in. Rub the cloth (through waste paper) against the board edges with a bone folder. (see Figure 167).

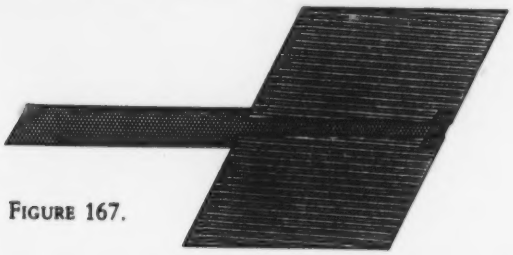


FIGURE 167.

10. Apply adhesive to the extending portion of bookcloth and fold it over to meet the one inch turn-in (see Figure 168).

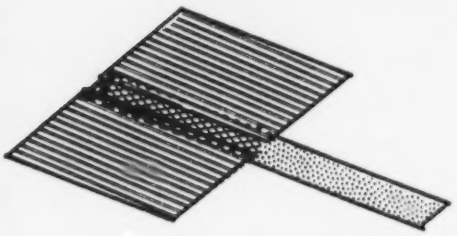


FIGURE 168A.

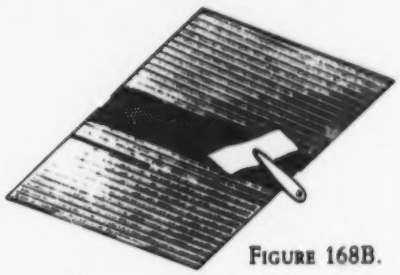


FIGURE 168B.

11. Remove the item from the envelope.

12. Brush a cross-stroke of adhesive—or use a strip of double-sided tape—on the interior of the bottom board of the folder and paste the *empty* envelope down (see Figure 169).

Note: The slit side of the envelope must be next to the spine of the folder; otherwise the item may slide out. Let the folder dry completely under a weight before enclosing the item.

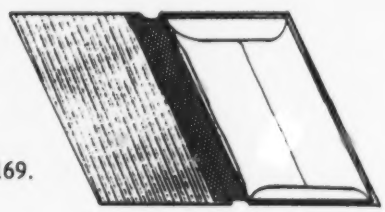


FIGURE 169.

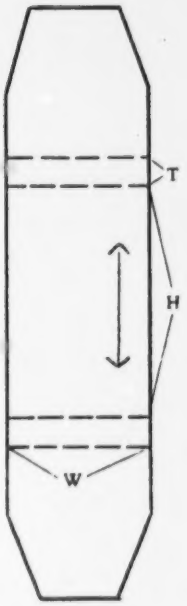


FIGURE 170.

Two-Part Folder Containing a Wrapper

Instructions for a two-part folder that contains a wrapper.

1. Measure and cut a vertical piece of map folder stock the width (W) of the book in one dimension by two and a half times its height *plus* twice its thickness (2½ H + 2T) in the other dimension. Angle the corners. [(W × (2½ H + 2T)] (see Figure 170).

2. Center the book on the piece of map folder stock and fold the extending stock around it, crease the stock against the top and bottom edges of the book (see Figure 171).

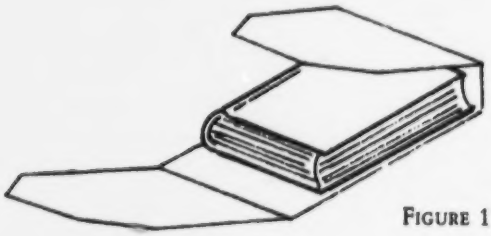


FIGURE 171.

3. Lay the book aside and sharpen the creases with a bone folder.

4. Measure and cut a horizontal piece of map folder stock that is the height (H) of the book wrapped in the vertical piece in one dimension by two and a half times its width (2½ W) *plus* twice its thickness (2T) in the other dimension. Angle the corners. [H × (2½W + 2T) (see Figure 172).

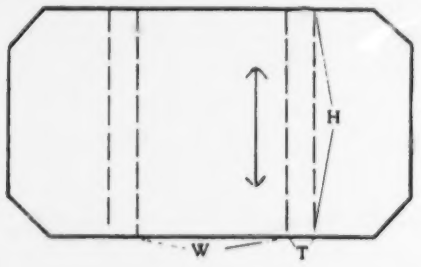


FIGURE 172.

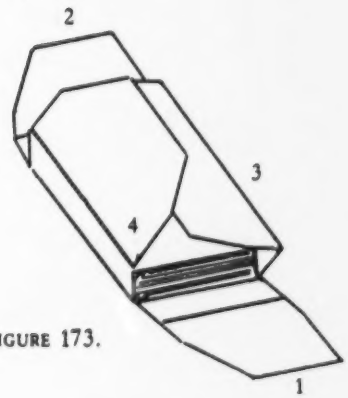


FIGURE 173.

5. With the book wrapped in the vertical piece, center it on the horizontal piece of map folder stock.

6. Fold the extending portions around, creasing them against the spine and fore-edge of the book (see Figure 173).

7. Lay the book aside and sharpen all creases with a bone folder.

8. Brush a cross of adhesive on the middle section of the horizontal piece of map folder stock or use a strip of double-sided tape.

9. Affix the vertical piece to the horizontal piece with adhesive. Weight down with a brick and let dry.

10a. Cut two pieces of pressboard slightly larger than the wrapped item in height and width.

b. Cut a spacer to the height of the boards equal to the thickness of the wrapped item *plus* one-quarter inch. (see Figure 174).

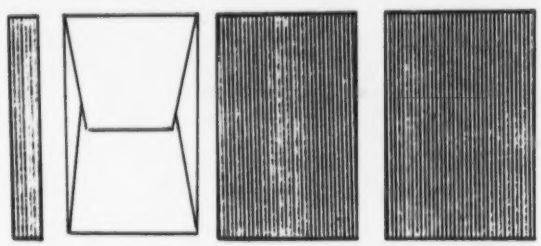


FIGURE 174.

11a. Cut one three-inch strip of book cloth equal to the height of the boards *plus* one inch.

b. Cut one three-inch strip of book cloth equal to the height of the boards *minus* one-quarter inch.

Note: To save cloth, the short strip may be cut from a piece of acid-free paper.

12. Apply adhesive to the underside of the *long* cloth strip and center the spacer on the adhesive (see Figure 175).

FIGURE 175.

13. Line up the boards, one on each side of the spacer, and paste them down. Rub the boards well, but not the spacer (see Figure 176).

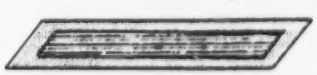


FIGURE 176.

14. Remove the spacer and turn the half inch wide ends of the cloth in. Rub against the inner edges of the boards with a bone folder through waste paper (see Figure 177).

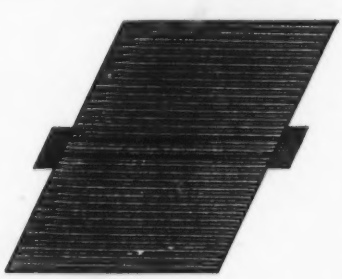


FIGURE 177A.

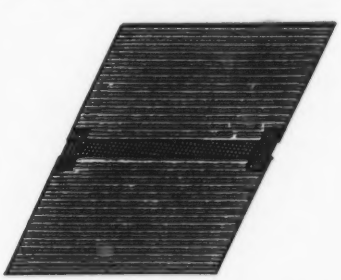


FIGURE 177B.

15. Apply adhesive to the underside of the *short* cloth strip.

16. Line up the short cloth strip with the turned-in ends of the long cloth strip and paste down. Rub against the inner edges of the boards with a bone folder through waste paper (see Figure 178).

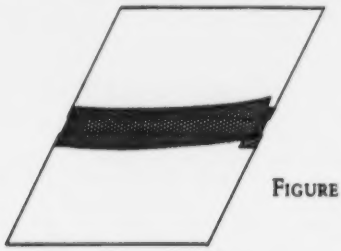


FIGURE 178.

17. Brush a cross of adhesive—or use a strip of double-sided tape—on the interior of the bottom board of the folder and affix the empty wrapper flush with the bottom of the folder. Let the folder adhere completely under a weight before enclosing the item. (See Figure 179).

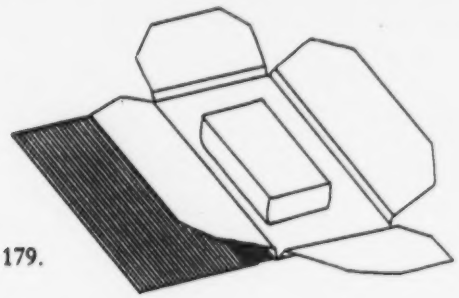


FIGURE 179.

THREE-PART FOLDER

The three-part folder is intended for soft cover or fragile books with damaged corners and edges or worn heads and tails that need a rigid and permanent support. This enclosure is suitable for materials at least *one* inch thick.

When a number of items are to be enclosed, it will speed up production considerably to sort them by size. Anything in the range of 5″ × 7″ to 6″ × 8″, for example, can be put into the same size folder as long as the inner wrapper fits snugly around the object. The inner wrapper should be adhered to the folding case in such a way that the bottom edge is flush with the bottom edge of the case. This will provide added support when the folder stands on the shelf and will help prevent sagging.

Materials:

1. Map folder stock .010
2. Pressboard
3. Book cloth (Recasing Leather) three or four inches wide
4. Adhesive: 50% PVA and 50% Methyl cellulose

Tools:

1. Paper cutter
2. Metal ruler
3. Scissors
4. Bone folder
5. Paste brush
6. Paste container
7. Weights (wrapped bricks)
8. Waste paper
9. Sponge or damp cotton cloth for wiping hands

Make a wrapper following steps 1–9.

1. Measure and cut a vertical piece of map folder stock that is the width (W) of the book in one dimension by two and a half times its height (2½ H) *plus* twice its thickness (2T) in the other dimension. [W × (2½ H + 2T)] (see Figure 180).

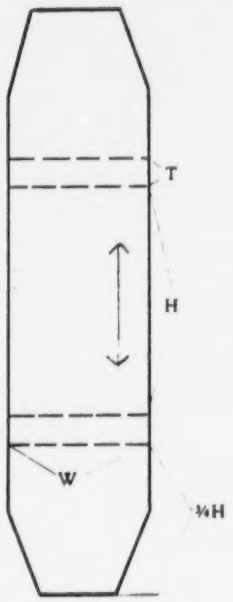


FIGURE 180.

2. Center the book and fold the extending map folder stock around it, crease the stock against the top and bottom edges of the book. (see Figure 181).

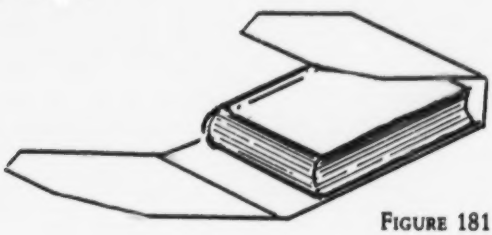


FIGURE 181.

3. Lay the book aside and sharpen the creases with a bone folder. Angle the corners.

4. Measure and cut a horizontal piece of map folder stock that is the height (H) of the book wrapped in the vertical piece in one dimension and two and a half times its width (2½ W) *plus* twice its thickness (2T) in the other dimension. [H × (2½ W + 2T)]. (see Figure 182).

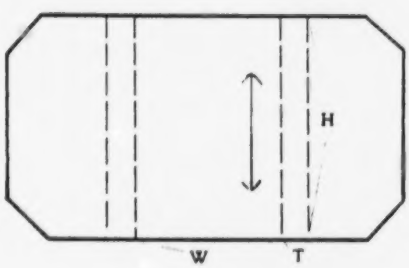


FIGURE 182.

5. With the book wrapped in the vertical piece, center it on the horizontal piece of map folder stock.

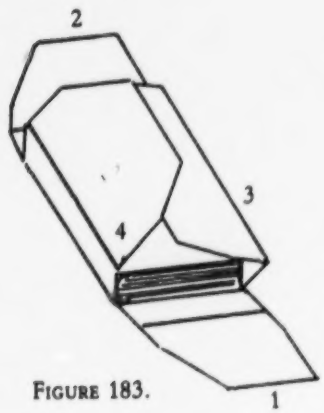


FIGURE 183.

6. Fold the extending portions around, creasing them against the spine and fore-edge of the book. (see Figure 183).

7. Lay the book aside. Sharpen the creases with a bone folder. Angle the corners.

8. Brush a cross of adhesive on the middle section of the horizontal piece of map folder stock or use a strip of double-sided tape.

9. Affix the vertical piece with adhesive on top. Weight down with a brick and let dry.

10. First cut three pieces of pressboard, each slightly larger than the height and width dimensions of the wrapped book. Then cut two pieces of pressboard the same height as the three pieces by the thickness of the wrapped book (see Figure 184).

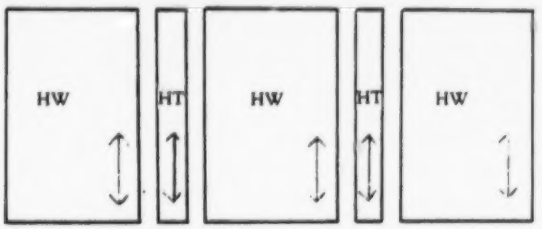


FIGURE 184.

11. Cut two pieces of book cloth that measures twice the height of the HT strips *plus* one inch.

Note: These two pieces should be three or four inches wide. Use three inch wide strips of book cloth for items up to one and a half inches thick and four inch wide strips for thicker items.

12. Brush adhesive on one side of the HT strips and affix them to the underside of the book cloth, as shown in Figure 185.

Note: To center the HT strips on the book cloth, mark the middle of pressboard and book cloth strips, then match the marks.

13. Brush mixture on the area indicated in Figure 186.

14. Assemble the case with the help of a steel ruler. Align the ruler against the bottom edge of one HT strip. Set the first HW piece in place, leaving a space of two pressboard *thicknesses* (see Figure 187), two strips of pressboard pasted together can be used as a spacer.

15. Continue to assemble the case by adding an HW piece, an HT strip and the last HW piece. Use the ruler as a guide.

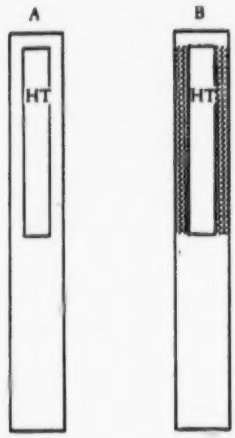


FIGURE 185.

FIGURE 186.

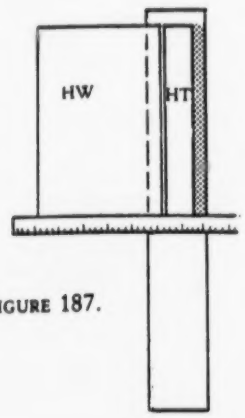


FIGURE 187.

16. Brush adhesive on the extending book cloth and paste into position as illustrated in Figure 188. Rub down well through waste paper with a bone folder.

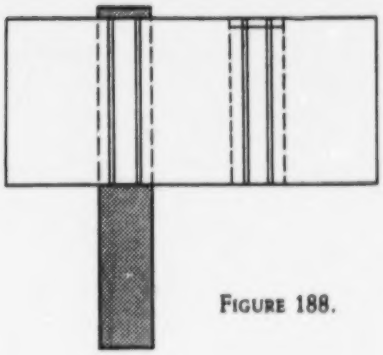


FIGURE 188.

17. Brush a cross of adhesive (or use double-sided tape) on the middle section of the folding case and affix the wrapper to it flush with the bottom edge of the folder. (see Figure 189).

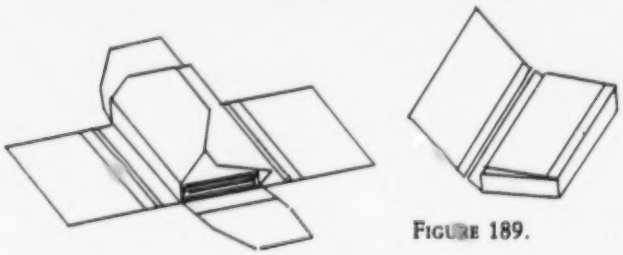


FIGURE 189.

18. Place a weight on top; let the folder dry before enclosing the item.

SLIPCASE I

This type of slipcase is the sturdiest of the enclosures presented in this manual. Because of the expense it should be reserved for large, heavy items more than two inches thick. The inner wrapper, called a *chemise*, protects the spine from light and consequent fading. It also prevents the case from abrading the book while being removed or replaced.

Materials:

1. Map folder stock .010
2. Pressboard
3. Book cloth—Buckram
4. Adhesive: 50% PVA and 50% Methyl cellulose

Tools:

1. Paper cutter
2. Scissors
3. Bone folder
4. Paste brush
5. Paste container
6. Weights (wrapped bricks)
7. Pressing boards
8. Waxed paper
9. Waste paper
10. Sponge or damp cotton cloth for wiping hands.

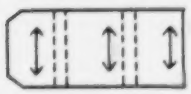
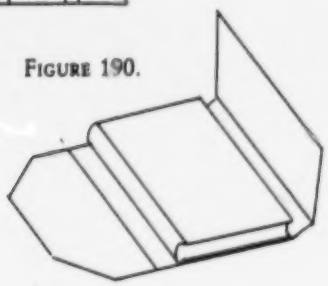


FIGURE 190.



Before making Slipcase I, prepare a chemise:

1. To make a chemise, measure, cut, and fold a horizontal piece of map folder stock that is the height (H) of the book by two and one half times its width, *plus* twice its thickness [H × (2½ W + 2T)]. (see Figure 190).

2. Tightly wrap the book, in its chemise, in waxed paper, for ease of handling and as a guard against adhesive.
3. Measure and cut four pieces of pressboard the height and width of the book. Make sure that the grain runs in the long direction of each piece. Since books are not always square, always take measurements from the largest dimension of the book (see Figure 191).

4. Sandwich the wrapped book between two pieces of pressboard. Set the other two pieces aside (see Figure 192).

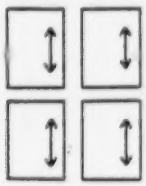


FIGURE 191.

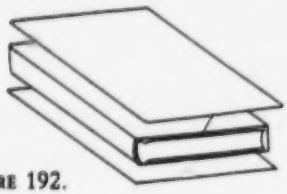


FIGURE 192.

FIGURE 193.

5. To measure the thickness for the slipcase, hold the top board down slightly with your hand and crease a paper strip against the lower and upper edges of the two boards at the spine (see Figure 193).

6. Transfer the measurement from the paper onto a piece of pressboard. The pressboard should be slightly longer than the height *plus* twice the width of one of the four pressboards prepared in step 3. Cut the pressboard strip along the T mark (see Figure 194).

FIGURE 194.

7. Mark off divisions on the pressboard strip for the side pieces using one of the four pressboards (see Figure 195). Cut at the marks.

FIGURE 195.

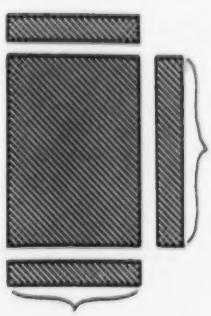


FIGURE 196.

Note: The length of one *piece is equal to the height of the piece of pressboard, the length of the other two pieces is equal to the width of the piece of pressboard. (see Figure 196).*

8. Cut a book cloth strip to a length equal to the combined length of the three side pieces *plus* two inches. The width equals the thickness *plus* two inches.

9. Divide the book cloth strip in half vertically and horizontally by making tiny creases next to the edges *only*.

10. Draw pencil lines, on the underside of the bookcloth strip, connecting opposite crease marks.

11. Divide and mark the long side strip of pressboard.

12. Coat the long pressboard strip with adhesive and affix it to the underside of the book cloth strip. Match the center marks of both strips (see Figure 197).

FIGURE 197.

13. Affix the two short side pieces of pressboard to the book cloth strip, with adhesive on either side of the long side strip (see Figure 198). Leave a space between strips equal to the thickness of one piece of pressboard. Place under weights to dry.

FIGURE 198.

14. Fold sections and cut notches at spaces between pressboard pieces, leaving about an eighth of an inch of cloth with which to cover the corners later (see Figure 199).

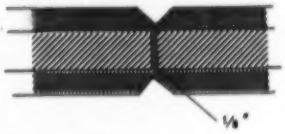


FIGURE 199.

15. Crease the cloth over the pressboard pieces along the entire length of the strip.

16. Fold the strip around the book block, sandwiched between the two pressboards (see Figure 200).

Note: If the foreedge of the book is not as thick as the spine, slip some scrap pieces of board underneath the pressboard to make it level before pasting the cloth down.

FIGURE 200.

17. Place a weight in the center of the pressboard. Apply adhesive to the underside of the cloth flaps and paste them down (see Figure 201).

18. Brush mixture evenly on one side of the two pressboards set aside earlier and paste it down to the other board being careful to match edges and corners (see Figure 202).

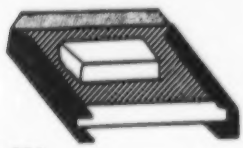


FIGURE 201.

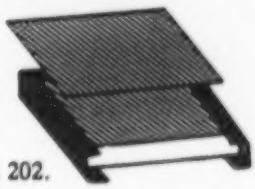


FIGURE 202.

19. Rub well and turn over to repeat steps 17 and 18, then place under a wooden board and bricks to dry.

20. Remove the book (in its chemise). Then cut the extending cloth at the corners.

21. Apply adhesive and turn the cloth in (see Figure 203). Dry thoroughly.

22. Cut thumb notches with a pair of sharp scissors (see Figure 204).

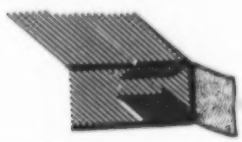


FIGURE 203.

FIGURE 204.

23. Remove the waxed paper from the book unit and slide the book wrapped in the chemise into the slipcase.

SLIPCASE II

Slipcase II, unlike Slipcase I, is lighter, more economical and best suited for smaller books. The best material for making slipcase II is *map folder stock*, which renders a pliable, close-fitting enclosure. The sides of the enclosure expand outward to allow easy grasping and removal of the enclosed book, without abrasion.

Materials:

1. Map folder stock (Library board can be substituted), 10 or 20 point caliper
2. Double-sided tape

Tools:

1. Steel ruler
2. Bone folder
3. Paper cutter
4. Scissors

Instructions for preparing Slipcase II:

1. Cut a piece of map folder stock to approximately two inches *larger* than twice the width of the book by three times its height *plus* twice its thickness. The grain should run parallel to the *shorter edges*. This is the *horizontal* piece [(2W + 2") × (3H + 2T)]. Divide it in half and mark at each short edge (see Figure 205).

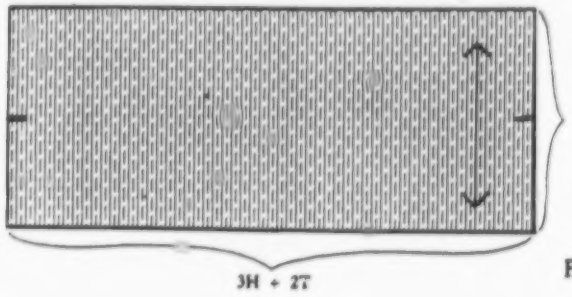


FIGURE 205.

2. Align a steel ruler on the dividing marks and score along this line with a bone folder (see Figure 206).

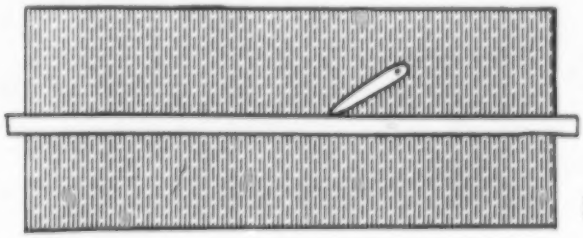


FIGURE 206.

3. Fold along the score and sharpen with a bone folder (see Figure 207).

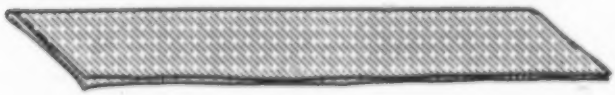


FIGURE 207.

4. Measure and cut the folded piece to the width of the book. Center the book on the folded piece (see Figure 208).

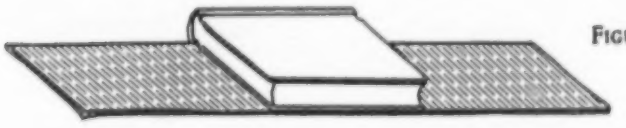


FIGURE 208.

5. Crease the extending portions against the top and bottom edges of the book (see Figure 209).

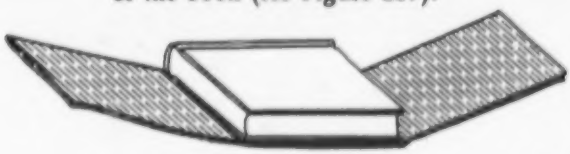


FIGURE 209A.

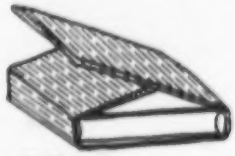


FIGURE 209B.

6. Lay the book aside. Sharpen the creases with a bone folder. Trim one-quarter inch from the edges of flap A and angle the lower open edges (see Figure 210).

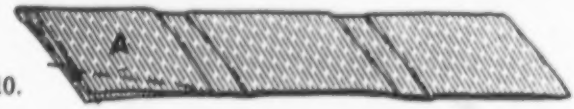


FIGURE 210.

7. Cut a piece of map folder stock to four times the width *plus* two book thicknesses by the height of the book [(4W + 2T) × H]. The grain should run parallel to the *shorter* edges. This is the *vertical* piece. Fold this piece in half (see Figure 211).

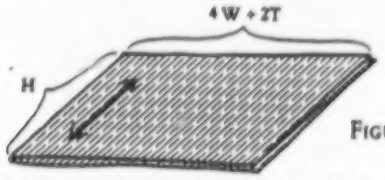


FIGURE 211.

8. Align the spine of the book with the folded edge of the vertical piece of map folder stock (see Figure 212).

9. Crease the extending part around the fore-edge of the book (see Figure 213).

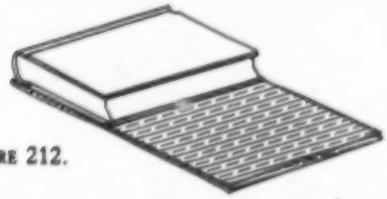


FIGURE 212.

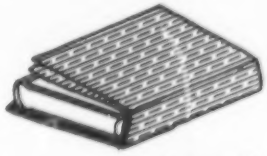


FIGURE 213.

10. Lay the book aside and sharpen the creases with a bone folder. Mark the outer vertical flap with a pencilled D and the inner one with a C (see Figure 214).

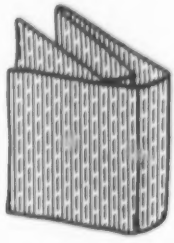


FIGURE 214.

11. Trim flap D to three-quarters of the width of the book and angle the corners. Apply a thin strip of double-sided tape to flap C (see Figure 215). *Do not remove the wrapper paper strip from the tape yet.*

    Note: You have now prepared both a vertical and a horizontal piece of map folder stock (see Figure 216).

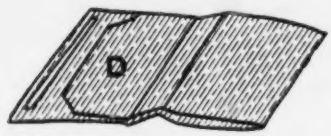


FIGURE 215.

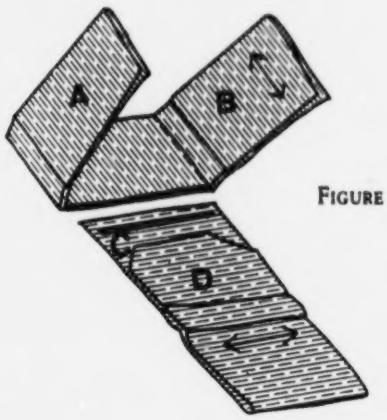


FIGURE 216.

12. Unfold both pieces of stock. Turn the vertical piece over and place flap C on the lower middle section of the horizontal piece (see Figure 217). Make sure that the fold of flap C is aligned with the lower edge of the horizontal piece. Hold in position while peeling the wrapper paper from the double-sided tape. Press down firmly on flap C over the taped area.

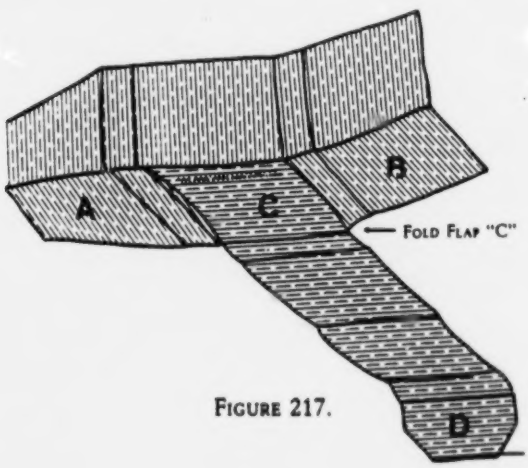


FIGURE 217.

108

13. Fold over the upper portion of the horizontal piece (see Figure 218).

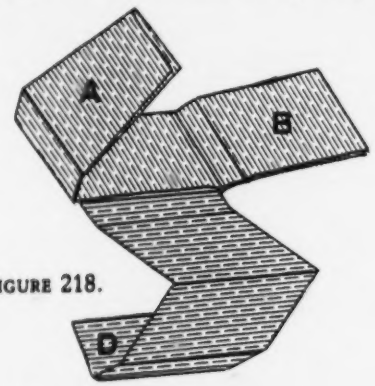


FIGURE 218.

14. Bring the vertical piece up and over (see Figure 219).

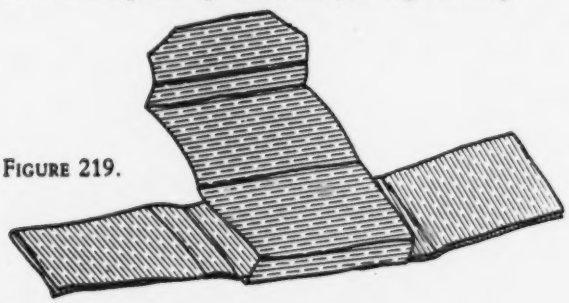


FIGURE 219.

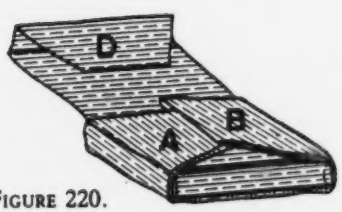


FIGURE 220.

15. Tuck flap A into flap B (see Figure 220).

16. Measure and cut a strip of map folder stock slightly narrower than the spine of the slipcase. The length should equal the height of the slipcase *plus* three inches. Place the strip along the spine and crease it against the head and tail edges of the slipcase (see Figure 221). Crease and tuck the two short ends of the strip between the doubled map folder stock at the head and tail.

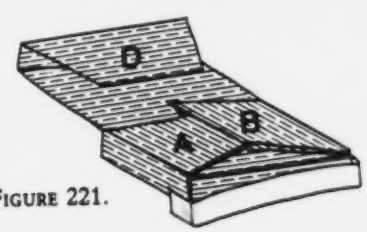


FIGURE 221.

17. Fold the extending portion of the vertical piece over flaps A and B and around the spine. Tuck in flap D (see Figure 222).

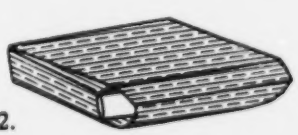


FIGURE 222.

SLIPCASE III (FOR BOOKS WITH DETACHED BOARDS)

In most libraries, books with detached boards are tied with cotton tape or held together with rubber bands. Cotton tape, even tightly tied, can loosen, permitting the boards to shift causing damage to the bookblock. The use of rubber bands, which rot and become sticky as they deteriorate, can cut into the bookblock, and should be avoided at all costs.

For books that will not be immediately rebound, and in particular those that may eventually be rebound or restored *using original parts*, slipcase III (for books with detached boards) is an excellent method of preservation. Easy access to the enclosed book is permitted by loosening two flaps which also prevent the boards from being separated from the book and subsequently becoming lost.

Because it is easy and inexpensive to produce and does *not* require liquid adhesive, this type of slipcase can be used for materials at many levels of importance.

Materials:

1. Map folder stock or Bristol board
2. Acid-free wrapping paper
3. Double-sided tape

Tools:

1. Ruler
2. Bone folder
3. Paper cutter
4. Scissors

Instructions for preparing Slipcase III:

1. Measure and cut a piece of wrapping paper to twice the height of the book by four times its width *plus* one thickness. [2H × (4W + T)] (see Figure 223).

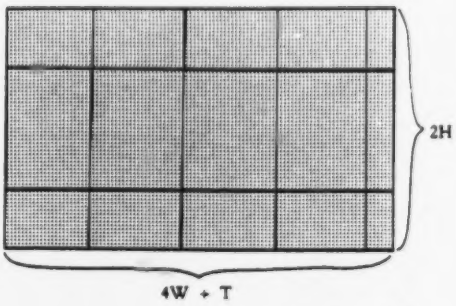


FIGURE 223.

2. Center one of the detached boards on the wrapping paper, along the short edge, so that equal portions extend at top and bottom. Crease the extending portions of the paper over the board and fold along the long sides of the wrapping paper (see Figure 224).

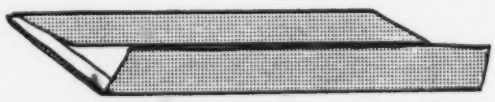


FIGURE 224.

3. Measure the thickness (spine width) of the book and transfer this measurement to each short edge (see Figure 225).

FIGURE 225.

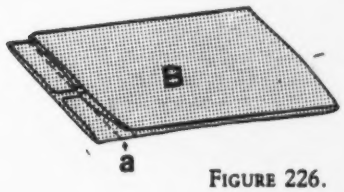


FIGURE 226.

4. Bring side edge of B over to line a. Align the top and bottom edges. Fold and crease (see Figure 226).

5. Next bring the edge side A over to line b. Align the top and bottom. Fold and crease (see Figure 227). This establishes the spine area (see Figure 228).

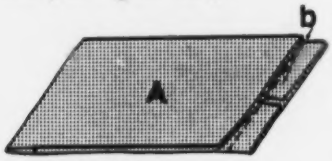


FIGURE 227.

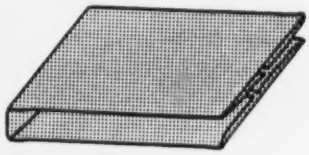


FIGURE 228.

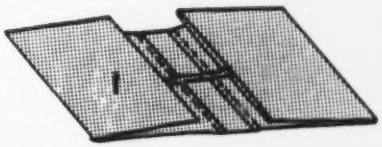


FIGURE 229.

6. Fold each short edge over to approximately one-eighth inch away from *its* spine crease. Make sure that the top and bottom edges are aligned. Fold and crease (see Figure 229). This completes the formation of pockets one and two.

7. Insert the detached boards in pockets 1 and 2. (see Figure 230).

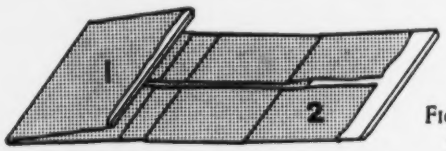


FIGURE 230.

8. Cut a strip of map folder stock wide enough to fit between the spine fold and the fore-edge fold of pocket 2 (see Figure 231). The length of the strip equals the height of the book *plus* twice its thickness *plus* four inches (H + 2T + 4″). Angle the corners.

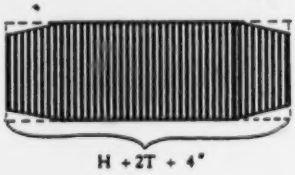


FIGURE 231.

9. Affix the map folder stock strip under packet 2 using double-sided tape. Make sure that equal portions extend at top and bottom (see Figure 232).

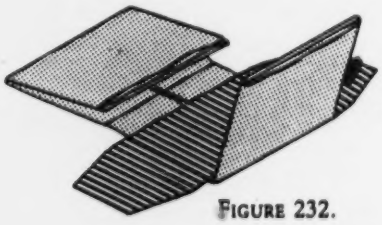


FIGURE 232.

10. Fold pocket 2 down and place the book block on top (see Figure 233). Then fold pocket 1 over the book block.

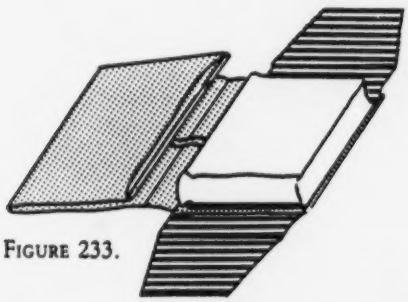


FIGURE 233.

Note: Both boards, in their respective pockets should fit snugly against the shoulder of the book block.

11. Fold the extending map folder stock flaps up and around the book. Crease the folds. Tuck the flaps in as shown (see Figure 234).

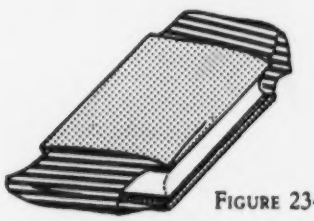


FIGURE 234.

Archives & Manuscripts: Conservation

A Manual on Physical Care and Management

Mary Lynn Ritzenthaler

BASIC MANUAL SERIES
Society of American Archivists Chicago, 1983

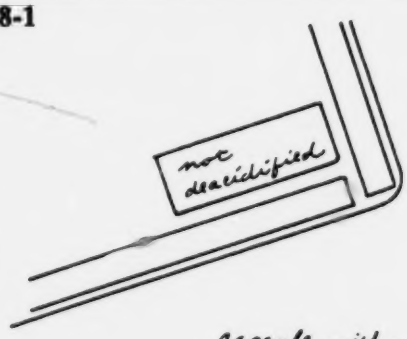
113
105

B8. Polyester Encapsulation

Polyester encapsulation is a method of providing physical support to fragile and brittle documents, which generally are in single-sheet format. Once enclosed in polyester, archival documents may be handled without danger of tearing or suffering from other physical abuse. Polyester encapsulation is readily learned with a bit of practice, and the procedure is easily reversed by cutting away the tape holding the capsule together. Encapsulated documents may be photocopied or microfilmed directly through the polyester.

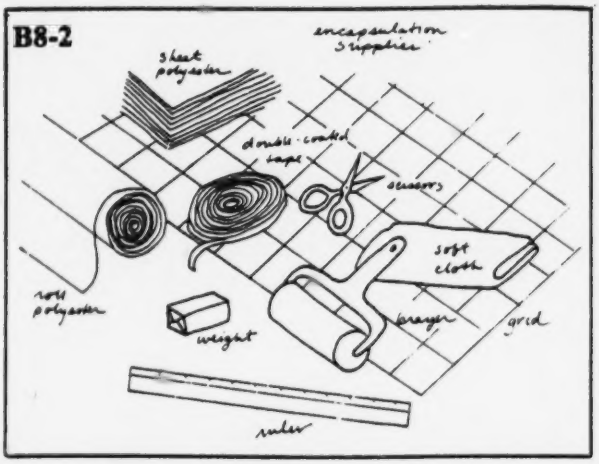
Encapsulation provides physical support only and does not affect the chemical stability of paper; chemical deterioration will not be halted by enclosing paper records in a polyester capsule. For this reason, it is recommended that deacidification precede encapsulation if at all possible. If deacidification is not possible, however, the document will still benefit from the physical support and protection that encapsulation provides. When encapsulation is undertaken without prior deacidification, it is recommended that a visible reminder of this fact be incorporated in the capsule to help ward off the natural feeling of complacency that once a document is encapsulated, its treatment is complete. A brief statement—"not deacidified"—typed or written in pencil on alkaline paper will serve notice that the document has been physically protected but not chemically stabilized (see Figure B8-1). Such a notice complements the documentation kept on collections and conservation treatments, and is especially useful in the event of personnel changes.

B8-1



Capsule with rounded corner and non-treatment reminder

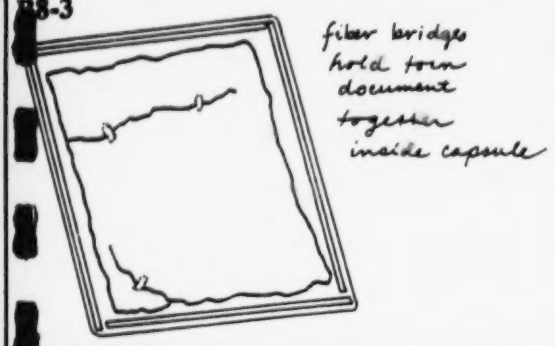
B8-2



The following materials are necessary: Polyester sheets, grid, 3M Scotch Brand® double-coated tape No. 415, soft lint-free cloth, weight, brayer, and scissors or straightedge and blade (see Figure B8-2). Polyester is available in standard-sized precut sheets as well as in rolls; it is also available in various weights and thicknesses. 3-mil polyester is appropriate for standard- to medium-sized documents, while 5-mil polyester should be used for oversized materials such as maps, posters, and blueprints. The polyester should contain no plasticizers, surface coatings, or UV inhibitors or absorbers, and should meet goverment specifications L-P-00670B(2) and L-P-377B. Mylar® Type D, Melinex® Type 516, or Scotchpar® Industrial Grade Polyester Film are acceptable. No other plastic materials should be substituted for polyester. The 3M Scotch Brand® double-coated tape No. 415 is the only tape recommended for use in encapsulation. No substitutions should be made, nor should the tape ever be applied directly to archival materials.

Before proceeding, documents to be encapsulated must be carefully examined. Static electricity within the capsule helps to hold documents in position and keep them from coming into contact with the edges of the double-coated tape. Since the static charge could affect or attract any loose or flaky media, such as pastels, charcoal, or thick watercolors, documents with such images should not be encapsulated. The static charge also will help to hold a document that is suffering slight tears in one piece. Major breaks or fractures, however, should be mended before encapsulation to ensure that pieces do not come away after enclosure and then float randomly within the capsule. Encapsulation reduces but does not entirely eliminate the need for mending. There may be occasions when major mending can be avoided through the use of tiny "bridges" of long-fiber Japanese paper positioned across a tear at intervals to hold the document together (see Figure B8-3). As stated

B8-3



above, deacidification should precede encapsulation if feasible; all other necessary treatments, such as mending and surface cleaning, should be carried out before encapsulation as well. Dirt that is not removed prior to encapsulation will not only be unsightly and move about within the capsule due to the static charge, but the particles also can become embedded in the paper fibers as pressure is applied to the capsule when forcing out the air.

Once documents have been examined for their suitability for encapsulation and have undergone all appropriate treatments, the actual process can commence. Two pieces of polyester should be cut; these should be one inch larger on all sides than the document to be encapsulated. It is helpful to work on a grid so that the polyester and the document can be properly squared, which will result in a neat and pleasing product.

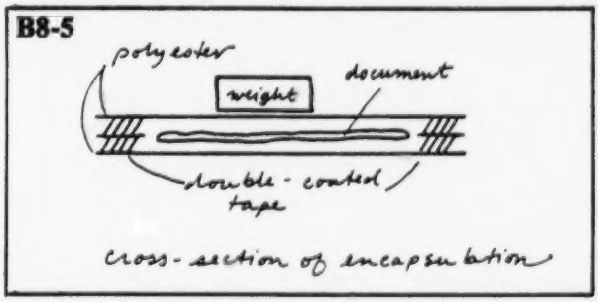
One piece of polyester should be placed on the grid and squared. It should be wiped with a soft lint-free cloth to remove any dirt and also set up the static charge (see Figure B8-4). Caution: the surface of polyester scratches readily, and care must be taken to avoid rubbing on it too hard, even with a soft cloth. Next, the document is placed on the piece of polyester, and it too is aligned or squared using the grid as a guide. There should be a one-inch margin of polyester extending around all four sides of the document. Once properly aligned, a clean weight should be placed on top of the document to keep it in position.

B8-4

The double-coated tape is next applied on the polyester around all four sides of the document, approximately 1/8 inch away from its edge. The grid should be used as an aid in positioning the tape in straight lines. The tape may abut at three corners with a gap of 1/16 inch left at the fourth corner for air circulation. At this stage, the brown protective paper is left *on* the tape.

The second piece of polyester is then wiped with a soft cloth and placed clean side down on the document, making sure that it is exactly aligned on top of the first piece of polyester. The weight is then carefully pulled away from its position on top of the document and placed on top of the second piece of polyester. Care must be taken to avoid moving the document while manipulating the polyester. At this point, the weight is holding the entire capsule in position (see Figure B8-5).

B8-5



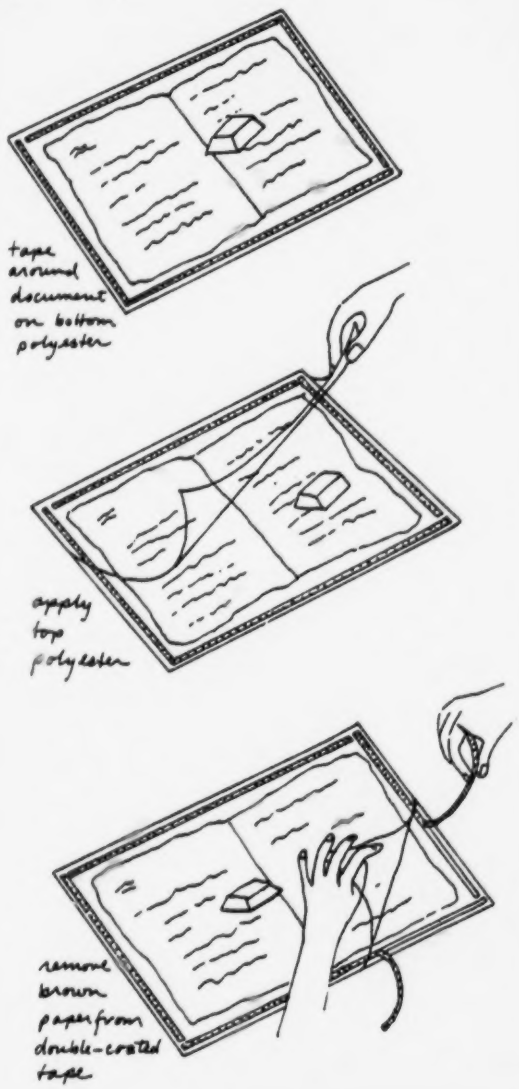
Using a brayer or soft cloth, excess air should be pushed out of the package by going over its entire surface. Then, carefully lifting one corner of the top piece of polyester, the strips of protective paper should be pulled off the tape along two sides of the document (see Figure B8-6). The polyester should be gently adhered along the lines of exposed tape. The brayer or soft cloth should be used again to remove any air pockets or bubbles. At this point, the slip of paper indicating that the document has not been deacidified should be slipped in at the back of the document if appropriate.

The protective paper from the two remaining sides should then be pulled away from the tape, and the polyester pressed into firm contact with it. The entire surface of the capsule should be gone over again with the brayer or soft cloth to remove any remaining air (see Figure B8-7).

Finally, the capsule should be trimmed using either a straightedge and blade or a paper cutter, leaving a margin of approximately 1/16 inch away from the tape around all four sides. This margin of polyester prevents dirt from accumulating on the edges of the tape. The last step is to round the four corners of the capsule, using scissors, a fingernail clip, or the much more expensive "corner rounder." The latter is available from archival suppliers. If the corners of the capsule were left

BEST COPY AVAILABLE

B8-6



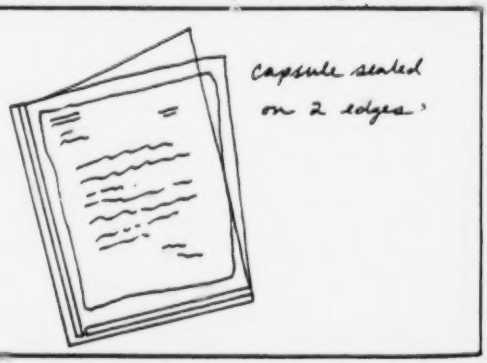
B8-7

square, the sharp edges could tear or otherwise damage unprotected documents with which they may come into contact.

Other methods besides double-coated tape have been devised to seal the four edges of polyester capsules. Some people have used sewing machines to quickly stitch together the pieces of polyester. More sophisticated are the machines that bond two sheets of polyester together via either ultrasonic welding or electromagnetic radiation. The result is an attractive, flat, and unobtrusive weld. While encapsulating machines are expensive, they are feasible for major programs that undertake a large amount of encapsulating. See Appendix F for suppliers of these machines.

Polyester sheets may be used in a number of other ways besides encapsulation to support and protect fragile documents. Polyester folders may be made by sealing one or two edges of two sheets of polyester together with double-coated tape (see Figure B8-8). A

B8-8



number of these polyester folders can be kept on hand and used as needed in carrying out reference functions; unprotected fragile documents can easily be slipped into a folder before being given to a researcher. If necessary, extra support can be provided by placing a piece of two-ply museum board in the folder with the document. Polyester easily creases with the use of a bone folder, and a variety of small envelopes or slings can be devised to contain documents for exhibition and storage purposes. Polyester also can be cut to the proper dimensions and creased to form protective book jackets (see Figure B8-9). Folded items, such as pamphlets, can be encapsulated, and polyester books with post bindings can be constructed as well. See the Library of Congress pamphlet, *Polyester Film Encapsulation*, listed in the bibliography (Appendix D), for instructions in a number of these techniques.

Photographs may be encapsulated if desired. Given the availability, however, of ready-made polyester and other inert plastic sleeves that are designed expressly for photographic prints and negatives, the effort to encapsulate such materials by hand does not seem warranted.

NORTHEAST
DOCUMENT
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CENTER

PRESERVATION OF LIBRARY & ARCHIVAL MATERIALS: A MANUAL

Edited by Sherelyn Ogden, Director of Book Conservation

Northeast Document Conservation Center, Andover, Massachusetts 1992

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REPAIRING PAPER ARTIFACTS

The generally accepted method of repairing torn paper or reinforcing weak areas in a sheet uses strips of strong, almost transparent, acid-free paper, adhered with a strong, colorless water-based adhesive that is acid-free and easily reversed. The following materials are recommended by paper conservators for repair of documents, book pages and other paper objects.

PAPERS

The preferred repair papers are made in Japan from *kozo*, *mitsumata* or *gampi* fibers. These papers (often erroneously called rice papers) exist in different weights with names such as *Sekishu*, *Tengujo*, *Kizukishi*, and *Usumino*. The fiber content of Japanese papers differs, with some papers containing fibers that are not of conservation quality. To be safe, only papers that contain 100% *kozo*, *mitsumata* or *gampi* fibers, or a combination of these, should be used. These Japanese papers are ideal for repairs because they do not discolor or become brittle over time, and they have long, strong, flexible fibers, which produce a lasting repair. The lighter-weight papers are especially well suited to repair of documents since they are translucent and unobtrusive and will not obscure the text of a document. Most conservators use strips of paper, with torn rather than cut edges, because a frayed edge makes a less visible, softer, repair.

ADHESIVES

Use of a proper adhesive is essential. Any adhesive used for mending paper objects must have the following properties:

Sufficient strength: it should hold the object for an indefinite length of time.

No tendency to discolor: it should not yellow, darken or stain.

Reversibility: it should allow the repair paper to be easily removed with minimal effort and no damage to the object, even after many years.

Few commercially available adhesives meet all these criteria. Commercial library or wallpaper pastes may lose hold on aging and often contain harmful additives. Rubber cement or animal glues usually darken or stain. Several synthetic adhesives, such as white "glues," are very difficult if not impossible to remove once they have begun to age.

Pressure-sensitive (self-adhering) tapes should be avoided at all costs. Most of the adhesives on these tapes cause staining over time and require toxic solvents and technical expertise for removal. The adhesives on commercial gummed tapes, which require wetting, are less damaging, but most (including the gummed linen tape favored by many framers for hinging) stain in time and should be avoided for objects of value.

Commercial products in general should be avoided even if they are reputed to be safe because commercial products are subject to alteration by the manufacturer. This year's non-staining tape may have an adhesive with a different formula next year.

Starch-Based Paste. For many years conservators have favored homemade starch-based pastes. These are made most often from either rice starch or wheat starch (not flour, but the starch that has been extracted from the flour). There are many recipes for these pastes. One recipe for wheat starch paste follows:

1. Place one cup of wheat starch and five or six

cups of distilled water in the top of a very clean double boiler.

2. Mix well and let stand at least 20 minutes.

3. Fill the bottom part of double boiler with a small amount of cold water so that the upper section does not touch the water.

4. Place on medium high heat and cook, stirring constantly with a clean wire whisk.

5. When the paste begins to thicken (this may happen right away), reduce heat and continue stirring.

6. Stir for about half an hour; then remove from stove. The paste should be thick and translucent. As it cooks and thickens, it will become more difficult to stir. To aid in stirring, a wooden spoon may be substituted for a wire whisk, but the spoon should be one that has not been used for the preparation of food.

7. When cooked, the paste should be transferred to a clean container for storage. It should be allowed to cool before use. Prior to use the paste should be strained. A Japanese paste strainer works well for this.

Quick Wheat Paste. University Products, a supplier of conservation materials, has published a quick recipe for wheat starch paste. The advantage of this recipe is that small quantities of paste can be easily prepared. If necessary strain the paste prior to use.

Place [1 T.] wheat starch in a deep container, add [5 T.] distilled water and place in microwave unit. Microwave on high setting 20 to 30 seconds, remove paste and stir. Place back in unit and microwave another 20 to 30 seconds. Remove and stir again. Continue this process for 3 to 4 minutes depending on the power of your microwave unit. Paste should stand for a few minutes after microwaving before use.

Different consistencies of paste are required, depending upon the particular mending task at hand. A consistency similar to heavy cream is adequate for most mending. Pastes should be diluted with distilled water to achieve the consistency required.

Starch paste should not be refrigerated; cover and store in a cool, dry place. It will only keep for a week or less. Some conservators recommend adding a preservative. However, the preservatives used are toxic. It is preferable to make paste in small quantities when it is needed rather than add a preservative and store it for long periods. If paste discolors, grows mold, or develops a sour smell, discard immediately. Discard if dark flecks appear in the paste since they may indicate mold or bacterial growth. See Abbey Newsletter for "A Method for Storing Additive-Free Wheat Starch Paste" by sterilizing it in tubes (Janet Stone and Elizabeth Morse, December 1989, vol. 13 no. 8, p. 147-8).

Methyl Cellulose. Starch pastes require time to make and thus are not practical if they are to be used only occasionally. A simpler paste can be made from methyl cellulose, which comes in powdered form and is sold by viscosity (in general, the higher the viscosity the more stable the methyl cellulose). Mix one rounded tablespoon of methyl cellulose with ½ cup distilled water. Let it stand for several hours before use. It will thicken on standing but can be thinned to the appropriate consistency with water. Methyl cellulose is not so strong as starch paste but should hold adequately if the document is not to be handled extensively or if it is to be encapsulated in polyester film. Methyl cellulose keeps well for several weeks and does not require a preservative.

MENDING PROCEDURES

Tearing Mending Strips. It is desirable for mends to have a soft edge, both to increase the strength of the bond and to prevent paper from breaking where it bends against the edge of the mend. To tear mending strips, draw parallel lines of clean water on the Japanese paper using a small, soft artist's brush, a ruling pen filled with water (instead of ink), or a small cotton swab. Tease the mending paper apart along the wet lines. Make the strips different widths to conform to different tears; ¼", ½" and ¾" will be most useful. If many mends are to be made, it is helpful to tear a supply of strips in advance.

Applying the Mending Strips. Using a flat piece of glass or plastic as a pasting surface, apply starch paste or methyl cellulose to a strip of Japanese paper with a flat brush (about ¼" wide). Include the exposed fibers on the edges of the strip. Then lift the strip with tweezers and place it over the tear. If the document is one sided, place the mend on the reverse, paste side against the document. Lighter-weight papers tend to pull apart when wet with paste. For this reason it is easiest to use strips not more than two inches long. For longer tears, several short strips may be used, placed end to end. It will take practice to manipulate the thin, wet repair strips.

Once the mending strip is in place, lay a sheet of silicone release paper or nonwoven polyester

(Reemay, Hollytex), over the repair. Tap the repair lightly.

Drying the Mended Sheet. If possible, weight the repair while it dries. Weighting insures good adhesion and prevents cockling of the paper. Repairs may be weighted as follows: first place small pieces of release paper or nonwoven polyester over and under the area to be dried. Sandwich these and the mend between pieces of blotter. Lay a piece of glass on top of the sandwich and put a weight (about one pound) on top of the glass. The weights may be small bags of lead shot or pieces of lead covered with cloth. One pound fishing weights from sporting good stores make excellent weights provided they have at least one flat side to prevent rolling. Repairs should be weighted for one hour or longer. A photographer's tacking iron, placed on a low to medium setting, can be used to speed up the drying process. The tacking iron should not be applied directly to the document. Place a piece of nonwoven polyester between the iron and the document. Iron until dry (10 to 20 seconds) then weight for a few minutes to flatten.

Heat Set Tissue. Heat-set tissue was developed for convenient, rapid paper repairs. This prepared mending material consists of thin pure cellulose lens tissue coated on one side with a mixture of two heat-activated acrylic resins. The tissue can be removed with ethanol and is applied with a tacking iron. It is weaker than Japanese tissue, and mends may not adhere so well. A variety of heat set tissues are available on the market. The only ones acceptable for use on valuable materials are those that meet Library of Congress specifications. The following instructions are provided by Bookmakers, the supplier of heat set tissue made to these specifications.

"[The] temperature of the tacking iron should be controlled at 190 - 200°F. It is unwise to rub the bare face of the hot tacking iron directly onto the tissue when attaching it to the mending area because heat and friction attract particles of acrylic onto the face of a fresh tissue mend...To avoid this effect, a thin piece of Japanese paper, silicone release paper or white polyester fabric can be used between the face of the iron and the heat-set tissue. For best results large mended areas should be pressed in a heated platen press for at least 8 seconds, using a temperature of 180°F at the surface of the mend. For small tear mends, hand pressure with the hot iron is usually sufficient to achieve consolidation.

The shape of a heat set tissue patch must be carefully considered so as to be consistent with the nature and position of the tear and the general condition of the paper. For mending lacunae, two patches slightly larger than, yet conforming to, the contours of the missing area should be shaped in the following manner: place a sheet of polyester film over the lacuna and place the tissue over the film. With a needle, outline in the tissue the desired shape of the patch, and tear along the line made by the needle.

A tear which leads in from an edge is best mended by tearing heat-set tissue so that it tapers from the inner area of the tear to the outer edges of the paper."

Heat-set tissue should ordinarily be applied to the reverse side of a document. However, if it is necessary to support a tear from both sides of the paper, one patch should be larger than the other.

It is possible to tone heat-set tissue if it contrasts too starkly with the mended paper. Before use, the uncoated side can be brushed with a water-color solution slightly lighter than the paper to be mended, and allowed to dry. The tinted tissue tends to darken when heat is applied.

Sources of Supplies

This list is not exhaustive, nor does it constitute an endorsement of the suppliers listed. We suggest that you obtain information from a number of vendors so that you can make comparisons of cost and assess the full range of available products.

Bookmakers 6001 66th Ave., Suite 101 Riverdale, MD 20737 (301) 459-3384	Paste, Reemay, Hollytex, silicon release, methyl cellulose, tacking iron, heat set tissue, polyester film , repair papers.
TALAS 213 West 35th St. New York, NY 10001-1996 (212) 736-7744 FAX (212) 465-8722	Paste, paste strainer, Reemay, Hollytex, silicon release, methyl cellulose, tacking iron, polyester film , repair papers.
Hardware Store, Grocery Store	Double-boiler, wooden spoon, whisk, distilled water

SO: 8/92

NORTHEAST
DOCUMENT
CONSERVATION
CENTER

100 BRICKSTONE SQUARE
ANDOVER
MASSACHUSETTS
01810-1494

TEL 508 470-1010
FAX 508 475-6021

TECHNICAL
LEAFLET

Conservation
Procedures

SURFACE CLEANING PAPER

WHEN TO CLEAN

Although it is neither necessary nor desirable to remove all dirt or discoloration from old papers, some cleaning will often improve the appearance of an artifact. Cleaning can also remove substances that could eventually be detrimental to the paper.

The term cleaning refers to a variety of conservation procedures. The simplest of these is surface or "dry" cleaning, which is done with a soft brush or an erasing compound. If the dirt is superficial, a dry surface treatment may provide all the cleaning that is necessary. Paper may also be cleaned with water. Placing an artifact in a bath is the most common way of cleaning with water, but there are other aqueous methods that do not require immersion. The most complex cleaning procedures involve chemicals. The two principal types use bleaching agents or organic solvents. These methods, especially bleaching, are most appropriate when the appearance of the object is of great importance. Surface cleaning should precede wet cleaning and mending. If documents are not dry cleaned before washing, surface dirt may become ingrained in the paper. Adhesives used in mending can also set surface dirt in place.

The surface cleaning technique described here may be used on book pages, manuscripts, maps and other documents. It should not be used on brittle newspapers, bookbindings, book edges, photographs, or intaglio prints (those with raised lines such as engravings, etchings, etc.). Neither should it be used on pastels, pencil, charcoal, watercolors, or other media that are not firmly bound to the paper or that may be lifted or erased by abrasives. Colors may smear, especially if hand applied. Cleaning such materials should be left to a professional conservator.

SUPPLIES AND EQUIPMENT

Materials needed for dry cleaning are a soft brush (a drafting brush is excellent) and an erasing compound. Different types and commercial brands of erasing compounds are available. These vary in composition. They are sold as granules in cleaning pads (Magic Pad, Mars Pad, Opaline Pad, Trace-Clean-X) or loose in canisters (Skum-X Powder, Dandy Rub Powder), and also as block erasers (Magic Rub Eraser, Mars Plastic Eraser).

HOW TO CLEAN

To begin work, clear an area that has a large, clean, smooth surface. It is most important to keep the work area free of the erasing granules produced by cleaning. If granules remain on the working surface and the paper to be cleaned is placed over them and rubbed, holes may be created in the paper. Working on large sheets of brown kraft paper may help you to dispose of the granules.

Begin the cleaning by brushing the surface of the object with a soft brush to remove loose dirt and dust. Use up and down strokes and work across the paper. Be careful to avoid enlarging tears by working towards the tears and in the direction of the tear. With books, be sure to brush the dirt out of the gutter.

If, as is usually the case, dirt is well attached to the paper, an erasing compound is more effective than a brush. But use a brush first to remove the loose dirt. Because residues of the erasing compound may

be left behind on the paper regardless of how carefully the paper is brushed after cleaning to remove them, an erasing compound should be used only when necessary. If the erasing compound does not appear to be removing dirt, do not use it.

To clean with granules, knead the pad to release the granules. Test first in an inconspicuous spot to make certain that no damage to the media is occurring. Steady the paper with one hand and test by gently rubbing the granules with a finger over one small area. Once you are certain that the media are not being lifted or erased, rub the pad over the object starting from the middle and working towards the edges. Work with light pressure, moving in small circles to avoid streaking. Although the pad itself can be rubbed over the paper in most places, fingers are better in torn areas or where inks have weakened the paper. When cleaning near the edges do not use a circular motion, but rub from the middle towards the edges. This will prevent tearing the edges, which are often fragile. Be careful going over inks that have eaten through or weakened the paper. Avoid areas of color or pencil notations, which may be archivally significant.

Some people prefer to use their fingers for dry cleaning. Sprinkle granules from a canister over the object to be cleaned or knead granules out of a cleaning pad. Using your fingers, rub the granules gently over the surface of the object moving in small circles. Fingertips, rather than the pad, should be used in areas where the paper is torn.

Granules and loosened dirt produced during the cleaning process should be brushed away frequently. Keep a careful eye on your work at all times to make sure that you are not smearing the medium or producing any tears and that you are not erasing or lifting anything but surface dirt. If the granules appear to have a color other than that of dirt, check to make sure that ink or color is not being lifted from the document.

It is essential that all granules be removed from the object following cleaning. Brush both sides of the object thoroughly and make certain the work surface is free of granules. Give special attention to the gutters of books, where granules may accumulate. Remove treated objects from the work area.

While granules will remove most surface dirt, block erasers may remove even more. It is not necessary, or even desirable, to remove all surface dirt from old documents. Erasers can abrade soft papers and are best used by persons experienced in surface cleaning. If it is necessary to use an abrasive harsher than granules, a block eraser is comparatively safe. Proceed with caution, trying an inconspicuous spot first. Rub gently in a single direction or in small circles. Take care not to create light erased areas, which will contrast with the general surface color. Do not use erasers over pencil, color, or inks.

Sources of Supplies

This list is not exhaustive, nor does it constitute an endorsement of the suppliers listed. We suggest that you obtain information from a number of vendors so that you can make comparisons of cost and assess the full range of available products.

Surface cleaning supplies

Charrette Corporation
31 Olympia Ave. P.O. Box 4010
Woburn, MA 01888
(617) 935-6000; (617) 935-6010
(catalogue svc. no.)

TALAS
213 West 35th St.
New York, NY 10001-1996
(212) 736-7744
FAX (212) 465-8722

University Products
517 Main St., P.O. Box 101
Holyoke, MA 01041
(413) 532-4277
(800) 336-4847 in MA

Skum-X cleaning products

Dietzgen Corp.
35 Cotters Lane, Bldg. EB 10-3
East Brunswick, NJ 08816
(908) 257-9400; (800) 473-1249

SO: 8/92

Harvard University
Widener Library Conservation Services: Institutional Profile

Nancy Schrock, Conservation Consultant to the Harvard College Library
David Moore, Supervisor of Conservation Services, Widener Library
Cambridge, Massachusetts

OVERVIEW

The materials prepared for the June 8th meeting represent the type of work done by Conservation Services in Widener Library, the largest library in a decentralized system of research libraries within Harvard University. Widener houses 3.5 million volumes in the humanities and social sciences. Rare books and special collections are housed in the Houghton Library as well as other research libraries and are not treated by Widener's facility.

Widener has repaired collections throughout its history. During the 1980's, the facility changed its approach from "quick repair" to fuller conservation treatment, modifying both its materials and its techniques to reflect changes in library conservation. Doris Freitag provided guidance in her capacity as Book Conservator for the Harvard University Library. The current Preservation Department was established in November 1990 and is headed by Carolyn Clark Morrow, Malloy–Rabinowitz Preservation Librarian. The Department consists of four divisions:

- Binding and Preparation;
- Conservation Services;
- Photographic Services;
- Preservation Review.

The Department is in the process of expanding its collections conservation program and coordinating its activities with other Harvard libraries, aided by a conservation needs assessment prepared by Nancy Schrock, Conservation Consultant, during 1991–92. Beginning in October 1992, a conservation laboratory under the direction of Chief Conservator Nicholas Pickwoad will serve the artifact conservation needs of libraries throughout the University. The lab will coordinate its activities with collections conservation programs system–wide.

Conservation Services in Widener is supervised by a collections conservator and staffed by conservation technicians for a total of 3.5 FTE. The permanent staff are experienced so they are able to perform all of the treatments currently done in Widener. Students and part–time employees provide, on average, an additional 25 hours/week. The staff received their training in a variety of ways: formal training in Europe, in–house training and experience, apprenticeships, and the North Bennett Street program. Staff also attend local workshops on conservation or bookbinding topics. Additional formal training will become available when the conservation laboratory opens.

Candidates for treatment are identified on an item–by–item basis by the Preservation Review Librarian, who receives damaged items following circulation and routes them for binding, reformatting (both microfilm and photocopy), or in–house repair. (See the flow chart for a description of this process). The average turn–around time for repair is 2–3 weeks with rush service available to the Reading Room and Interlibrary Loan. At the moment, the staff is able to keep up with demand.

Conservation Services is also developing an approach toward treating whole collections and categories of materials. During 1991–92, the staff conducted its first en masse treatment of a collection of 12,000 Widener volumes that were being re–catalogued in preparation for shipment to the Harvard Depository, the off–site storage repository. The project involved a survey of condition, analysis of needs, and implementation of a range of treatments, including refurbishing, contract binding and conservation services, and deacidification of selected

illustrated volumes. The mass deacidification program in Widener will be expanded in FY93 to include treatment of books scheduled for recasing or repair.

EXAMPLE OF COLLECTIONS CONSERVATION GUIDELINES AT WIDENER LIBRARY: CRITERIA FOR TREATMENT OF CLOTH CASE BINDINGS IN CONSERVATION SERVICES

The following is a draft of the type of guidelines that are being developed to deal on the collections level with specific categories of research material found in the Harvard College Library. The guidelines include a historic justification and recommended treatment. Books may be deacidified prior to treatment, depending upon paper type and condition.

Pre–1820/30 (hand binding) Prior to 1830, bookbinding was a hand craft, separate from the printing and publishing trades. Bindings were not consistent for all copies of a book, and individual books can provide evidence about binding history, ownership, and provenance.

Recommended treatment These should be reviewed carefully by a subject specialist before being rebound or repaired by a collections conservator. Treatment by a rare book conservator or boxing may sometimes be more appropriate

1830–1900/10 (nineteenth century edition binding) After 1830, bookbinding gradually became mechanized to keep pace with the demand for printing. Publishers' edition bindings replaced hand bindings that were made to order for the individual owner or bookseller. Bookbinding was mechanized slowly and, the nineteenth century edition binding retained elements of handwork well into the early part of the twentieth century. Collections conservation repair is recommended for these materials because the conservator or technician can respond to the irregularities of hand sewing and shaping of the original binding, retain evidence of original craftsmanship, and create a sound structure for long–term preservation. Commercial library binding is not appropriate because it is made to handle the perfectly square machine–made text blocks of twentieth century technology. Machine backing and buckram bindings are overly rigid and can damage the more fragile paper of older books, as well as being unsympathetic with the appearance of nineteenth century design.

Recommended treatment Collections conservation repair, saving the original bindings; boxing; or rebinding in–house with new endpapers and cloth case.

Post 1900/1910 (machine–made case bindings) By the early twentieth century, all the processes of bookbinding had been mechanized. Since then, developments have focused on making the technology more efficient and faster through increased automation. Products of power machinery originally, these books can withstand standard machine procedures used by the library binder. Since design has been transferred from the stamped cloth cover to the dust jacket, it is usually not important to save the original covers. The exact cut–off date for defining this category of material is up for debate. It could be 1900 with the introduction of the casing–in machine, 1910 assuming it took a while for the machinery to be adopted, or 1920 and World War I as a historical moment.

Recommended treatment Recasing by the commercial bindery unless there are special reasons to save the original boards (e.g., decorative covers or endpapers, provenance, or artifactual value).

SOURCE OF DATES

Rogers, Joseph W. (1967). "The Rise of American Edition Binding" in *Bookbinding in America* (New York: R. R. Bowker), and chronologies supplied by Pamela Spitzmueller in her Advanced Conservation Workshop on Nineteenth Century Bindings at the University of Iowa, 1990.

It is important to note that this chronology is based on developments in America, which closely paralleled industrialization in England. Countries that did not participate in the

Industrial Revolution in the nineteenth century will have different types of bindings. This is evident, for example, in the Judaica volumes from Eastern Europe where techniques of eighteenth century hand binding survive into the twentieth century. A different strategy will be necessary for these materials.

CURRENT TECHNIQUES

All statistics are based on FY 90–91.

I. Materials used in standard treatments

ADHESIVES

PVA — Jade 403; methyl cellulose (Talas).
Aytex-P wheat starch (Talas).
Filmoplast P tape.

BOOK CLOTHS

"D" starch filled buckram.
"C" book cloth and older cloths no longer on the market.

PAPER

Perma/Dur Ledger and Permalife (University Products).
Dove Gray Endleaf and Mohawk Vellum (Archivart).
PTI 70 pound Endleaf Paper (Paper Technologies Inc.).
Japanese papers (Talas, Aiko's).
Additional hand-made and modern papers no longer on the market.

BOARD

Binder's board.
Archival boxboard, 10 and 20 point (Paper Technologies Inc.).
Blue-gray/white barrier board (University Products).

II. Binding Repairs

STANDARD PROCEDURES

Spine cleaning: methyl cellulose.
Spine linings: (1) methyl cellulose, (2) PVA or PVA/methyl cellulose mix, (3) super, (4) paper liner or hollow tube.
Case: binder's board, "D" grade buckram, and PVA.

REBACK

Problem: Damaged spine.
Components: Paper spine liner, cloth spine strip and inlay.
Materials:
- Paper.
- Cloth.

Time: 15 minutes or more.
Number Completed: 216.

NEW ENDSHEETS

Problem: Detached cover.
Components: Super, paper liner, sewn endsheets.
Materials:
- Endsheets.
- Super.
- Paper.

Time: 0.5 hours.
Number Completed: 297.

NEW ENDSHEETS/REBACK

Problem: Damaged spine, boards detached.
Components: Super, paper liner, sewn endsheets cloth.
Materials:
- Super.
- Paper.
- Endsheets.
- Cloth.

Time: 45 minutes.
Number completed: 108.

NEW CASE

Problem: Damaged case needing replacement; book not suitable for commercial binding.
Components: Super, paper liner, sewn endsheets, new case, label (computer-generated).
Materials:
- Binder's board.
- Cloth.
- Paper.
- Super.

Time: 1–1.5 hours.
Number Completed: 446.

LIBRARY STYLE SPLIT-BOARD BINDING

Problem: Damaged case, text block heavy or oversized, unsuitable for commercial binding.
Components: Linen, paper liner, endsheets, boards attached to text block.
Materials:
- Linen.
- Paper.
- Endsheets.
- Cloth.
- Binder's gray board laminate.

Time 1–1.5 hours.

III: Enclosures and Pamphlets

PAMPHLET BINDING

Problem: Single section material requiring protection.
Components: LBS Archival Products binder.
Time: 10 minutes.
Number Completed: 467.

WRAPPER

Problem: Fragile material too small for phase box.
Components: Two overlapping creased boards attached with PVA.
Materials:
- 20 point bristol.

Time: 15 minutes.
Number Completed: 340.

PHASE BOX

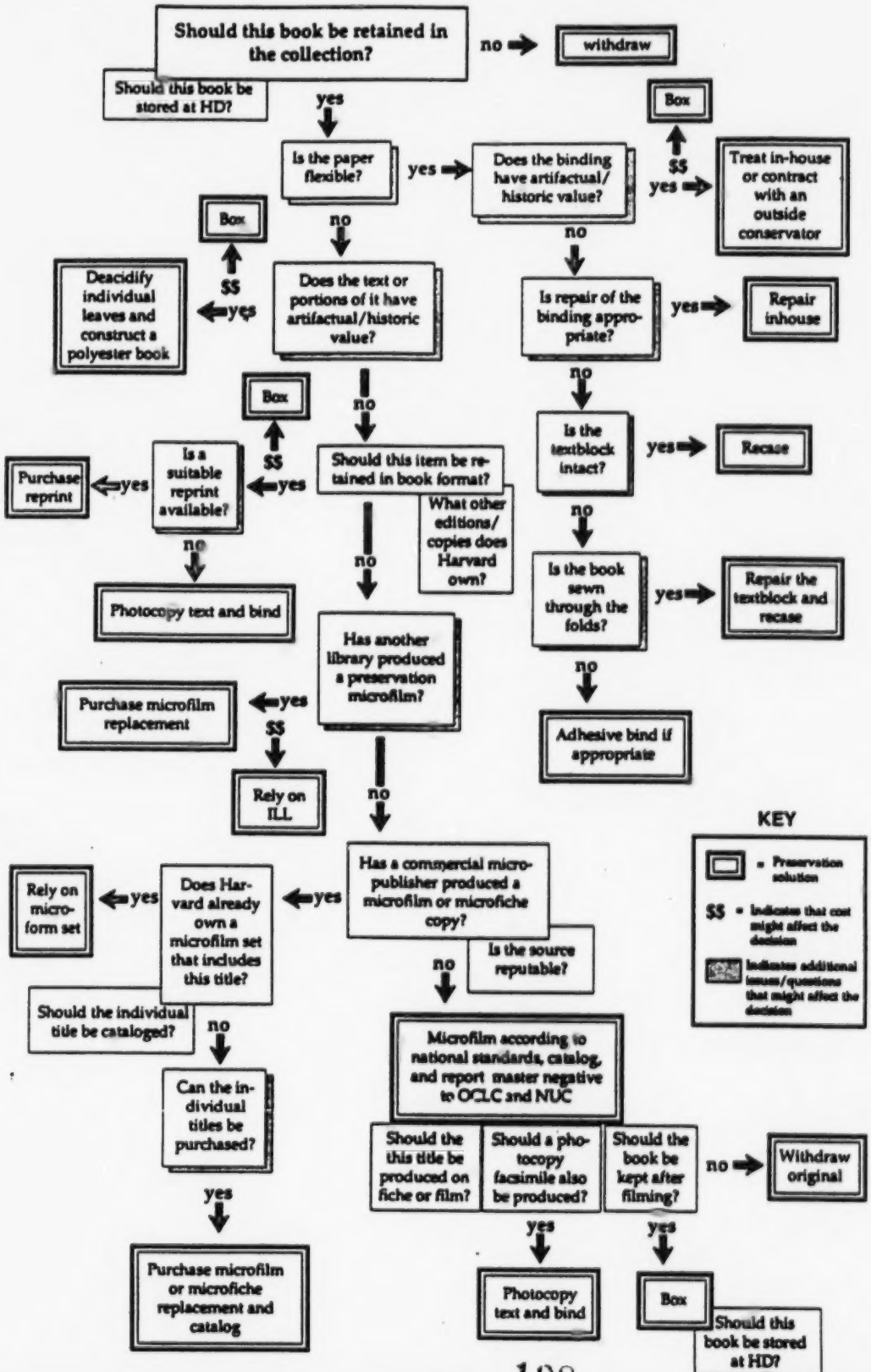
Problem: Fragile material needing protection, not candidates for reformatting or rebinding.
Components: Two overlapping creased boards attached with PVA; brass rivets and plastic washers.

Materials:
60 point board.
Brass rivets.
Plastic washers.
Time: 22 minutes on average.
Number Completed: 245.

PORTFOLIO
Problem: Loose sheets needing protection, not candidates for rebinding.
Components: Inner folders, cloth case with tie strings.
Materials:
Binder's board.
Cloth for the case.
20 point bristol for the inner wrapper.
Time: varies by size.
Number completed: 105.

Preservation Workflow

for a worn, damaged, or deteriorated book in the research collections



The Book Repair Program at Brigham Young University: An Institutional Profile

Randy Silverman, Preservation Librarian
Provo, Utah

INTRODUCTION

Brigham Young University's (BYU) Harold B. Lee Library (HBLL), situated in the arid Intermountain West, is a research library containing slightly more than three million volumes. The library consists of a main library, as well as separate business, museum, and learning resource center libraries. The Law Library is a separate organizational entity. All repair work is handled by the HBLL's Book Repair Unit. Located in the main library, the Book Repair Unit is an organizational component of the Preservation Department within the HBLL's Technical Services Division and reports directly to the Preservation Librarian. The HBLL also has a Conservation Lab responsible for the treatment of its special collections material. While separated physically within the main library from the Book Repair Unit, the lab collaborates with the Book Repair Unit as needed to help establish and improve treatment standards, order specific supplies, and provide advanced training.

HISTORICAL BACKGROUND

Oral tradition traces the Book Repair Unit's operation to the early 1960's. Originally, the program used "piece work" as an incentive to induce productivity. The early techniques included the use of clear or black pressure–sensitive tape for spine repairs, double–stitched binding tape for reattaching book blocks to their covers, and the nailing of temporary bindings (a local refinement on the stabbed sewing). This last technique, when "properly" executed, required that sixpenny nails be driven through the spine edge of an incomplete serial set over a piece of iron forcing the nail tip to curve back into the material on its underside to prevent patrons from getting cut on the protruding point.

Craig Jensen was appointed as the library's first conservator in 1977 and, after a one year internship at the Library of Congress, initiated a new era in book repair for the library. He focused primarily on rare book conservation but gave considerable attention to improving the repair standards for the circulating collection. In a shop comprised exclusively of student employees, Craig trained student employee Kirby Packam in the new techniques he devised. He then made him the Book Repair Supervisor to maintain the ongoing training of other student employees. Unfortunately, after showing great promise as a trainee, Kirby became intractable and the program once more lapsed into performing repairs that would prove damaging over the next ten years. Most significantly, the use of polyvinyl acetate applied directly on the spine of all repaired books, oftentimes in lieu of proper mending and sewing techniques, created a legacy that continues to haunt us as these materials resurface in need of further repair.

In 1983, Randy Silverman became Robert Espinosa's Assistant Conservator in the Conservation Lab. Two years later he took over the Book Repair Unit under the supervision of the Preservation Librarian, Ellen McCrady. Combining his commercial background (Dobbs Brothers Restoration and Conservation Company) with training as a rare book conservator, he and Robert worked to blend the shop's existing techniques with some commercial bookbinder's speed–tricks and a number of efficient book conservation techniques. Major improvements included:

- use of a first layer of Japanese paper and wheat starch paste in spine lining, over which a second layer of polyvinyl acetate and crash are applied;
- sewn–on endpapers as a standard procedure; the use of a reinforced case binding structure to afford maximum durability;

- use of a pamphlet binding structure that prevents adhesive from coming into direct contact with the pamphlet;
- use of cloth rebacking instead of rebinding (when appropriate) to preserve many original 19th and 20th century publishers' cloth bindings; and,
- standard application of laser printed paper labels for titling finished work.

James Fairbourn became the Book Repair Supervisor in 1987 after working in the shop for 1.5 years as an (incredibly) talented student employee. During his tenure, training standards and the quality of shop production have consistently improved. He has implemented many experimental techniques that are now considered norms while carefully maintaining a standard of excellence and service that has endeared the Book Repair Unit's work to the library at large. This accomplishment is more impressive given the work force he is responsible for training: twenty student employees and one volunteer! From this diverse pool of talent (and conflicting class schedules), he consistently produces beautiful work, and, on occasion, turns out someone who has gone on to a career in the library conservation profession.

FUNCTION OF BYU'S BOOK REPAIR UNIT

Under the direction of the Book Repair Supervisor, the Book Repair Unit is responsible for in-house repair of all general collections material deemed inappropriate for commercial library binding. This determination is based upon the physical characteristics of the designated material, the economic merit of in-house treatment, or the user demands that would prioritize in-house treatment because of time constraints. The repairs performed by the Book Repair Unit must:

1. incorporate techniques that will not prove damaging to the collection over the life of the material;
2. be expeditious to perform; and,
3. retain the original integrity of the object being treated whenever appropriate.

The Book Repair Unit, in collaboration with the Preservation Librarian and the Library Conservator, constantly strives to develop techniques that meet these criteria. In addition, the Book Repair Supervisor is responsible for: maintaining tools and equipment and ordering raw materials of suitable permanence and durability; hiring and training personnel to implement repair techniques appropriately; consistently monitoring quality and work flow within the shop; and, determining treatment specifications for material requiring repair. The Book Repair Supervisor also maintains an overview of the physical condition of the entire collection to insure that in-house book repair services are distributed equally throughout all library departments.

STAFFING AND ORGANIZATION

The Book Repair Unit is staffed by one full-time equivalent (1 FTE) supervisor, twenty half-time student technicians (10 FTE), and one half-time volunteer (0.5 FTE). The staff is non-union, with the salaries ranging from $5.00–5.40 per hour for student technicians, $7.50–8.00 per hour for student supervisors, and $21,000–30,000 per year for the full time supervisor. The entire staff receives in-house training, with student technicians learning from their student supervisors and ultimately from the Book Repair Supervisor. Improvements in technical and operating procedures come from a number of sources: the Book Repair Supervisor, the Preservation Librarian, the Library Conservator, the student supervisors, and occasionally from the student technicians themselves. A premise we share is that the shop can always stand improvement, and any good suggestion is welcome, encouraged, and rewarded (if only through recognition).

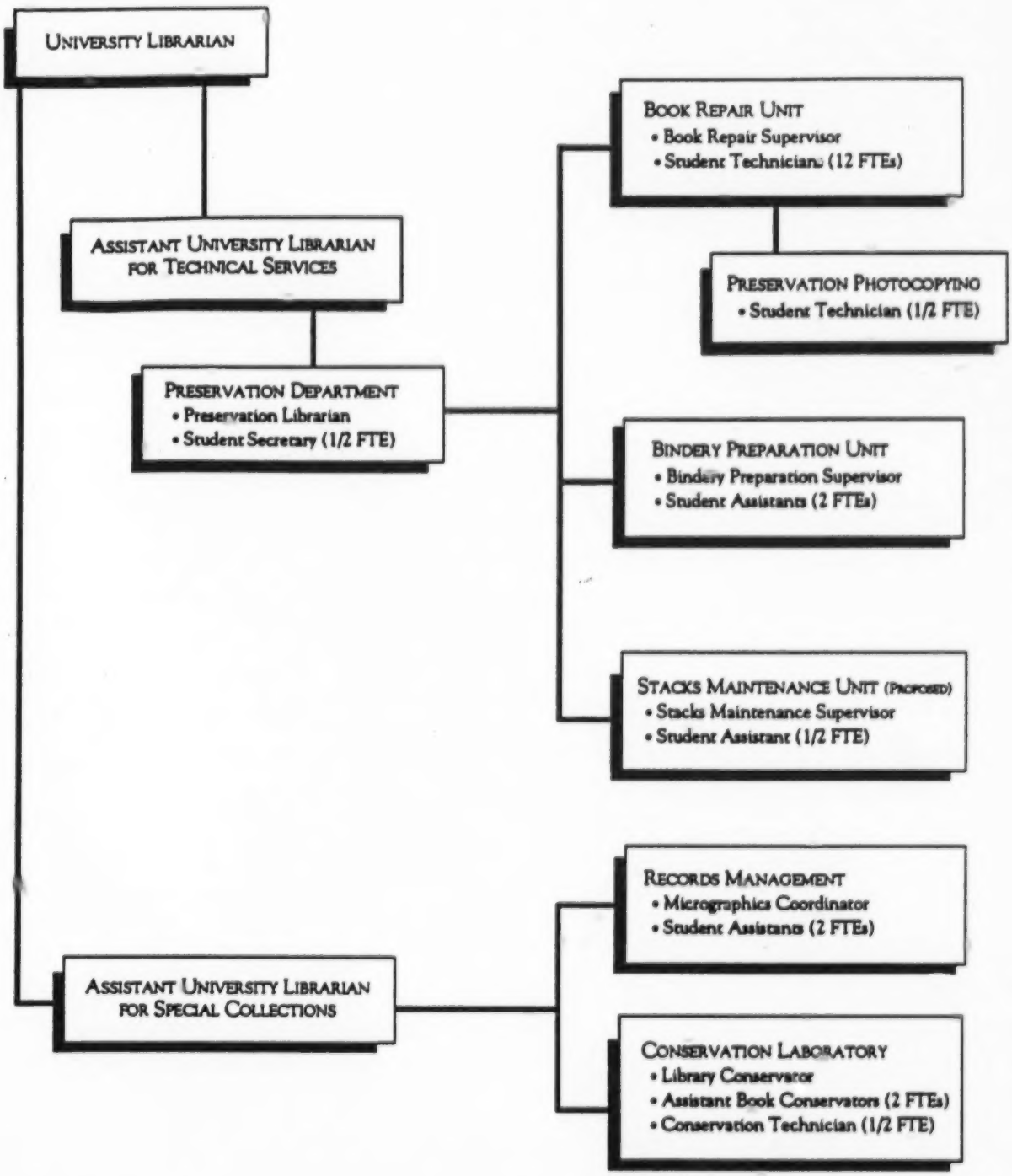
In an effort to eliminate the library's backlog of circulating material needing repair, the HBLL operated a night shift from 1989–1992. This shift was responsible for eliminating most of

the 500+ books in the backlog — the first time in the library's history that the backlog had been brought current. The task was accomplished by using two six-person teams, each of whom were required to bind 30 books per month from the backlog in addition to their normal load of incoming daily work. The rest of the shop focused on incoming work as usual, and maintained a turn-around time of approximately 30 days on most materials (except for the inevitable stragglers that seem to haunt the bindery). Most of the books in the backlog constituted the worst repair problems in the library because "easier" work had systematically been chosen over time in preference to these "problem" titles. The two teams chose to meet their quotas using different methodologies: one chose to have each individual perform every operation on every book independently; the other chose a team approach, with each individual specializing in specific steps of the treatment in an assembly-line fashion. Despite our expectation that one team would probably outshine the other, both approaches seemed to work equally well and produced excellent work. From this, we've confirmed that people respond well to a positive work environment regardless of the tasks required or the methodology used to accomplish the task. Additionally, small groups increase the amount of time that the student supervisor can spend giving personalized supervision to the technicians.

PROFESSIONAL DEVELOPMENT

The Book Repair Unit Supervisor has generous support from the library for professional development, and during the past four years has been able to attend one national and one statewide conference relating to book conservation per year. Additionally, technicians are encouraged to attend local activities that contribute to their professionalism. One year, a student supervisor with professional aspirations was even able to "piggyback" on two other staff members' attendance at an annual American Institute for Conservation meeting. The Book Repair Unit Supervisor also serves on library committees and represents the department when appropriate.

BYU PRESERVATION AND CONSERVATION: 1993 ORGANIZATIONAL CHART



WORK–FLOW AND TREATMENT SPECIFICATION

Ninety percent of the Book Repair Unit's work load is identified by the Circulation Department when material is returned to the library. Badly damaged work is also identified by shelvers working in the stacks. Treatment specifications are determined by the Book Repair Unit Supervisor. The material is checked out to either the Book Repair Unit or the Bindery Preparation Unit (for commercial library binding), and assigned a tracking number on a dated, color–coded identification slip. This procedure allows work to be traced and/or recalled for patron use while it is in the Preservation Department.

Other sources of books requiring repair include non–circulating material (serials, reference books, government documents, and books from the Reserve Library); books received in damaged condition through the gift or order processes; and, folio or quarto books that receive in–house use but do not circulate because of their awkward dimensions. Additionally, incomplete serial and periodical sets are routed to the Book Repair Unit from the Bindery Preparation Unit for temporary bindings until the set is completed and can be library bound commercially. This material receives standard temporary bindings, with the sewing style determined by the leaf attachment of the material to be bound.

Books containing paper too brittle to bind are reformatted as preservation photocopies under the supervision of the Book Repair Unit Supervisor, and sent to the Bindery Preparation Unit for commercial library binding.

Finished work is discharged from the Book Repair Unit to the Lettering Department (which is not part of the Preservation Department) using the NOTIS on–line computer system. After the work receives its call number label, it is routed back to the Circulation Department where it is discharged from Lettering and re–shelved for patron access.

Books repaired on a rush basis for the library's seven reference areas and three learning resource centers are dropped off and picked up by employees of the various departments, expediting the turn–around time on material that is in high demand.

PRIORITIZING WORK

Preservation treatment priorities are determined collection–wide by correlating physical condition with current use patterns. This system for determining preservation treatment priorities allows limited resources to be focused on material that is both currently damaged *and* at the greatest risk of receiving further damage through continued use. Implied in this policy is that while material may require some form of repair due to its poor physical condition, unused material at rest in the collection is in relatively little danger of sustaining further damage.

Currently, no grant–driven repair project exists at BYU, although certain collections do receive priority — a condition that is not always desirable. For example, BYU owns a collection of violin and viola music (the Primrose Collection) of international significance that requires binding before it can be cataloged. After cataloging, the records are contributed annually to an international bibliography. Consequently, a large number of pieces from this collection are bound each year, regardless of actual or anticipated demand. Additionally, thousands of nineteenth century books received by the library as a gift require repair before they can be shelved, despite their projected low use. Again, this has a negative impact on the Book Repair Unit, placing demands on it that undermine its ability to keep up with repair problems in the heavily–used circulating collection. This issue of the Book Repair Unit's need to prioritize its own work based on use patterns continues to be a small problem despite a policy drafted by the Preservation Department and adopted by the library that addresses this issue. As with many problems of this sort, our only hope of rectifying this problem may be the passing of time.

CURRENT TECHNIQUES

CASE BINDING

Technique: Rebinding for material that is inappropriate for commercial library binding due to technical considerations (weak paper or damaged sewing or text) or due to a need for fast turn-around time. Case has small squares to minimize the distance the text block has to sag before it rests on the shelf. The hinges are reinforced with an internal piece of crash laminated to boards (similar to a Bradel binding) but left unattached to the spine cloth to promote flexibility. Endpapers are sewn onto tapes and sewn to three sections of text block. To assure future reversibility, the first spine lining is Japanese paper and wheat starch paste, with the second spine lining a tightly-woven cotton crash and PVA. Titled with original cloth spine over new cloth or a laser printed Japanese paper label.

Binding design: Robert Espinosa from Alexis Pierre Bradel. Laser labels: Randy Silverman from Robert Milevski.

Materials:

Sailcloth cotton-linen book cloth (Permalin Products).
Machine-made Japanese paper (Paper Nao).
Stretch cloth (Holliston Mills).
Linen thread and cotton tapes (Johnson Bookbinding).
Machine-made endpapers Antique Laid (Process Materials) [no longer available].
Davey gold label binder's board (Library Binding Service).
Zin Shofu precipitated wheat starch (Conservation Materials, Ltd.).
Co-polymer PVA (Wisdom Adhesives).

Time: 2 hours.

Number produced in 1992: 1,049.

CLOTH REBACKING

Technique: Repair for failed cloth joints when original cover is to be preserved. To assure future reversibility, the first spine lining is Japanese paper and wheat starch paste, with the second spine lining a tightly-woven cotton crash and PVA. New Japanese paper internal hinges attach under the pastedown so the endpapers are not altered. Original cloth spine is reattached over new cloth spine.

Binding design: David Gingerich, from Randy Silverman *et. al.*

Materials:

Iris rayon book cloth (Permalin Products).
Machine-made Japanese paper (Paper Nao).
Stretch cloth (Holliston Mills).
Zin Shofu precipitated wheat starch (Conservation Materials, Ltd.).
Co-polymer PVA (Wisdom Adhesives).

Time: 2 hours.

Number produced in 1992: 191.

CLOTH SPINE REPAIR

Technique: Expeditious repair for failed outer hinge when endpaper hinges remain undamaged. Original spine-lining material left undisturbed. Titled with original cloth spine over new cloth or a laser printed Japanese paper label.

Binding design: Craig Jensen, *et. al.* Laser labels: Randy Silverman from Robert Milevski.

Materials:

Sailcloth cotton-linen book cloth (Permalin Products).
Co-polymer PVA (Wisdom Adhesives).

Time: 20 minutes.

Number produced in 1992: 481.

COVER-UPS STIFFENERS™

Technique: Commercially available reinforcement for modern publishers' trade paperback books estimated to receive low circulation as an alternative to library binding.
Binding design: Jerry Bexley, (Vinyl Industrial Products, Inc., 800-874-0855).
Materials:
Cover-Ups (archival polyester coated with acrylic adhesive).
Time: 10 minutes.
Number produced in 1992: 164.
Cost: Approximately $2.00 each.

DROP-BACK BOX

Technique: Permanent protective enclosure for damaged or fragile books. Drop-back spine, double wall construction. Titled with a laser printed Japanese paper label.
Binding design: Library of Congress. Laser labels: Randy Silverman from Robert Milevski.
Materials:
Canapetta book cloth (Bookmakers).
Archivart Dove gray endpaper (Process Materials).
Davey gold label binder's board (Library Binding Service).
Co-polymer PVA (Wisdom Adhesives).
Moriki colored Japanese paper for laser printed label (Hiromi Paper International).
Time: 3 hours.
Number produced in 1992: 1.

REHINGING LEATHER BOARDS

Technique: Rehinging of detached tight back or hollow back leather boards.
Binding design: Robert Espinosa from Anthony Cains. Dyed paper outer hinge: Don Etherington.
Materials:
Linen thread (Johnson Bookbinding).
Machine-made Japanese paper (Paper Nao).
Moriki colored Japanese paper for out hinge (Hiromi Paper International).
Zin Shofu precipitated wheat starch (Conservation Materials, Ltd.).
Co-polymer PVA (Wisdom Adhesives).
Time: 30 minutes per board.
Number produced in 1992: 32.

LIBRARY BINDING SERVICE PAMPHLET BINDER

Technique: Commercially available permanent binder for pamphlets. Text is sewn through the fold whenever possible, though stapling through the fold or through the side are possible.
Binding design: Fritz James, Barclay Ogden and Hans Wiesendanger.
Materials:
0.050 Boise Cascade high density acrylic coated board (Library Binding Service).
Acrylic coated C-1 cloth (Library Binding Service).
Cotton cambric spine reinforcement (Library Binding Service).
0.020 polyester (Library Binding Service).
Time: 10-15 minutes.
Number produced in 1992: 890.

PAMPHLET BINDING

Technique: Quarter–cloth pamphlet binding with cloth sides, this binding is used for pamphlets intended for the permanent retention. Endpaper and reversed book cloth hinge are wrapped around pamphlet and sewn through the fold, allowing the pamphlet to open freely. No adhesive comes into contact with the pamphlet itself, as the reversed book cloth hinge is glued directly to the boards before covering. A free guard in the center of each section prevents the thread from tearing through the center folds of the sections. Titled with a laser printed Japanese paper label. Details of the technique are published in: Silverman, R. (1988). "Small, Not Insignificant: An Examination of Pamphlet Binding Structures," *American Institute for Conservation of Historic and Artistic Works, Book and Paper Group Annual*, 6, pp 111–139.

Binding design: Randy Silverman from Pauline Johnson. Laser labels: Randy Silverman from Robert Milevski.

Materials:

Sailcloth cotton–linen and Iris rayon book cloth (Permalin Products).
Linen thread (Johnson Bookbinding).
Moriki colored Japanese paper for laser printed label (Hiromi Paper International).
Graphika machine–made endpapers (James River Corp.).
Davey gold label binder's board (Library Binding Service).
Co–polymer PVA (Wisdom Adhesives).

Time: 1.5 hours.

Number produced in 1992: 128.

PHASE BOX

Technique: Drop–back spine design commercially produced by Custom Manufacturing, Inc., Germantown, MD (Tel: 717–642–6340).

Binding design: Mike Waters.

Cost: Approximately $8 each.

Materials:

Archival corrugated board.

Time: 10 minutes (measuring and folding).

Number produced in 1992: 13.

POLYESTER ENCAPSULATION BOOK

Technique: Sewn encapsulation book for the protection of heavily used or intrinsically valuable books with damaged or brittle paper. Titled with a laser printed Japanese paper label.

Binding design: Bill Minter. Laser labels: Randy Silverman from Robert Milevski.

Materials:

Archival polyester (Pilcher Hamilton Corp.).
Canapetta book cloth (Bookmakers).
Davey gold label binder's board (Library Binding Service).
Archivart Dove Gray endpaper (Process Materials).
Co–polymer PVA (Wisdom Adhesives).
Moriki colored Japanese paper for laser printed label (Hiromi Paper International).

Time: 2 hours + encapsulation.

Number produced in 1992: 0.

POLYESTER STIFFENER

Technique: Clear polyester reinforcement for books published with paper wrappers as an alternative to case binding. Design prevents adhesive from coming into contact with cover or text, as the polyester and inner card support are held together with polyester tabs using double–sided tape.

Binding design: Randy Silverman from Craig Jensen.
Materials:
Archival polyester (Pilcher Hamilton Corp.).
3M #415 double coated tape (University Products).
0.020 archival board (Library Binding Service).
Time: 20 minutes.
Number produced in 1992: 519.

SPLIT BOARD BINDING

Technique: Extremely durable rebinding for heavy and oversized material. Endpapers have rayon book cloth hinge nested between two heavy-weight sheets, and sewn through the fold on tapes, attaching to three sections of text block. First spine lining, Japanese paper and wheat starch paste, second spine lining, dense canvas duck and PVA. Canvas is sandwiched between outer leaf of the endpaper, and inserted between two weights of binder's board. Covered as a quarter binding with cloth corners and sides. Titled with a laser printed Japanese paper label.
Binding design: Douglas Cockerell. Endpaper design from Gillian Boal. Laser labels: Randy Silverman from Robert Milevski.
Materials:
Sailcloth cotton-linen book cloth for spine and corners (Permalin Products).
Canapetta book cloth sides (Bookmakers).
Iris rayon book cloth joints (Permalin Products).
Canvas duck (army weave Dixie canvas #1370 Ganes Brothers).
Archivart Heavy Duty Endleaf (Process Materials).
Machine-made Japanese paper (Paper Nao).
Davey gold label binder's board (Library Binding Service).
Linen thread and cotton tapes (Johnson Bookbinding).
Zin Shofu precipitated wheat starch (Conservation Materials, Ltd.).
Co-polymer PVA (Wisdom Adhesives).
Moriki colored Japanese paper for laser printed label (Hiromi Paper International).
Time: 3 hours.
Number produced in 1992: 5.

TEMPORARY (TEMP) BINDING

Technique: Housing for incomplete serial sets and little-used library material. Text is sewn or adhesive bound, depending on the original leaf attachment. Crash lined directly to spine with PVA. Covered in quarter cloth, leaving grey/white board exposed.
Binding design: Craig Jensen.
Materials:
Starch filled buckram (Johanna Western Mills).
0.058 Boise Cascade grey/white board (Library Binding Service).
Stretch cloth (Holliston Mills).
Card-stock stiffener (James River Corp.).
Linen thread (Johnson Bookbinding).
Co-polymer PVA (Wisdom Adhesives).
Time: 20 minutes.
Number produced in 1992: 2,757.

COST COMPARISON OF BYU PRESERVATION TREATMENT OPTIONS

Cost Range Estimated in 1993 $$$	2.00	4.00	8.00	16.00	32.00	64.00	128.00	256.00	512.00
In-House Book Repair									
Paper Repair									
Tipping-In Pages	•	•							
Hinging-In Plates	•	•							
Heat-Set Tissue Repair	•	•	•	•	•				
Japanese Paper & Paste Repair	•	•	•	•	•	•			
Guarding			•	•	•	•			
Minor Binding Repair									
Slitting Unopened Pages	•	•	•						
Preparing for Commercial Binding		•	•						
Tightening Hinges	•	•							
Pocket	•	•							
Polyester Wrapper		•	•						
Cover-Up Paperback Stiffener™		•							
"Temporary" (Temp) Binding		•	•	•					
LBS Pamphlet Binder™		•	•						
Intermediate Binding Repair									
Cloth Spine Repair		•	•						
Corner Repair	•	•							
Replacing Torn Endpaper		•							
Reusing Original Case			•	•					
Rebinding/Major Binding Repair									
Cloth Rebacking				•	•				
Rehinging Leather Boards			•	•					
Pamphlet Binding				•	•				
Case Binding				•	•				
Case Binding + Resewing					•	•			
Oriental Binding Repair			•	•	•				
Islamic Binding Repair			•	•	•				
Polyester Encapsulation Book						•	•	•	
Split Board Binding					•	•			
Enclosures									
Phase Box			•	•					
Simple Portfolio				•	•				
Drop-Back Box					•	•			
Library Binding									
Double-Fan Adhesive Binding			•	•					
Sew Through the Fold				•	•				
Recasing				•	•				
Oversewing			•	•					
Rare Book and Paper Conservation									
Washing, Deacidification, Resizing					•	•	•	•	
Tape and Stain Removal				•	•	•	•	•	
Matting						•	•		
Historical Binding Repair						•	•	•	•
Conservation Rebinding						•	•	•	•
Mass Deacidification			•	•					
Preservation Reformatting									
Photocopying			•	•	•	•	•		
Microfilming					•	•	•		
Replacement				•	•	•	•	•	

SELECTED READINGS

Selected Readings

Books

Merrill-Oldham, Jan and Merrily Smith, eds. *The Library Preservation Program: Models, Priorities, Possibilities.* Chicago, IL: American Library Association, 1985. 117 pp.

This book includes papers on institutional priorities, administrative models, organization of preservation programs, staffing considerations, and fiscal concerns.

Milevski, Robert J. "Recasing a Textblock into Its Original Cover" and "Replacing a Worn Spine with a New Buckram Spine." In *Book Repair Manual.* Carbondale, IL: Illinois Cooperative Conservation Program, July 1984. 25-30.

Video

"Basic Book Repair with Jane Greenfield." New York: H.W. Wilson, 1988. VHS. (30 minutes). Available from: H.W. Wilson, 950 University Avenue, Bronx, NY 10452, (212) 588-8400.

- **This video demonstrates very simple techniques for the repair of books and paper.**

"Book Repair for Circulating Collections." Portland, OR: Istor Productions, 1987. VHS. (18 minutes). Available from: Jack C. Thompson, Thompson Conservation Laboratory, 1417 North West Everett, Portland, OR 97217, (503) 248-0046.

This video presents common problems and repairs of circulating collections.

"Library Preservation: Fundamental Techniques." Washington, DC: Library of Congress, 1986. Six videotapes. Available from: Baker & Taylor Video, 501 South Gladiolus, Momence, IL 60954, (800) 435-1845.

This series of six videotapes covers basic preservation techniques and procedures, and includes the following titles:

"Books in General Collections: Recasing, with Don Etherington." 1986. (79 minutes).
This video covers re-attaching a text block into its original case.

"Books in General Collections: Paper Repair and Pockets with Robert Milevski." 1986. (81 minutes).
This video covers paste making, determining grain direction, mending with Japanese paper and with heat-set tissue, and making pockets for maps and other loose inserts.

"Pamphlet Binding with Jan Merrill-Oldham." 1986. (60 minutes).
This video covers different binding styles for different kinds of pamphlets (single signature, adhesive bound, etc.).

"Surface Cleaning, Encapsulation, and Jacket Making with Judith Fortson-Jones." 1986. (80 minutes).
This video covers the demonstration of appropriate techniques for surface cleaning, encapsulation, and jacket making.

"Protective Enclosures: Portfolios and Boxes with Robert Espinosa." 1986. (114 minutes).
This video covers construction of phase boxes and clam shell boxes.

"Protective Enclosures: Simple Wrappers with Lynn Jones." 1986. (52 minutes).
This video covers construction of light-weight enclosures.

"Rebacking Cloth Bindings." New York: Guild of Book Workers, 1985. VHS. (120 minutes). Available from: Jack C. Thompson, Thompson Conservation Laboratory, 1417 North West Everett, Portland, OR 97217, (503) 248-0046.

Jerilyn Davis demonstrates rebacking cloth bindings.

"Preservation and Conservation: Basic Preservation Techniques for Libraries and Archives." Baltimore, MD: Johns Hopkins University, 1987. VHS. (70 minutes). Available from: Collections Maintenance Dept, Milton S. Eisenhower Library, Johns Hopkins University, Baltimore, MD 21218, (301) 338-8325.

This video demonstrates basic repair techniques including surface cleaning, paper mending, paperback reinforcement and recasing a book in its original case. A manual accompanies the videotape.

"Simple Repair for Library Materials." New Haven, CT: Yale University Libraries, 1981. (17 minutes; 74 color slides and audiocassette tape). Available from: Yale University Libraries Conservation Department, PO Box 1603, Yale Station, New Haven, CT 06520, (203) 432-1710.

This presentation covers basic book repair techniques. A conservation workshop capable of working on special collections material can do simple repairs of the sort under discussion here. This may not be an appropriate use for such a facility since the cost of such skilled labor is high.